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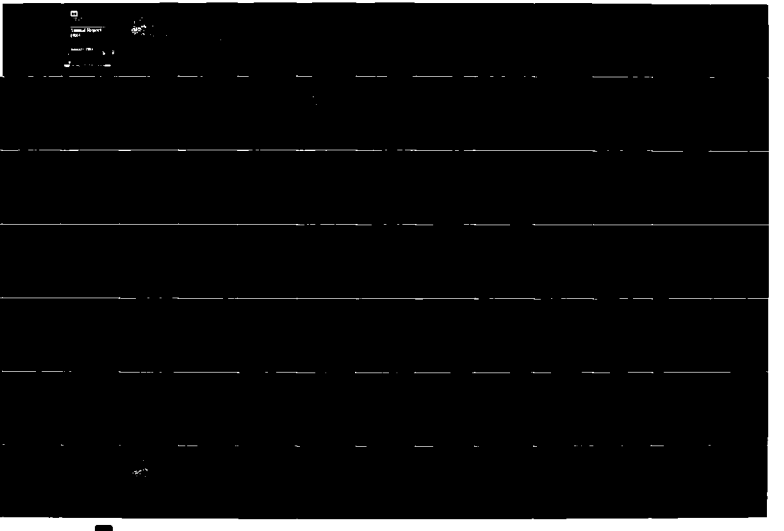
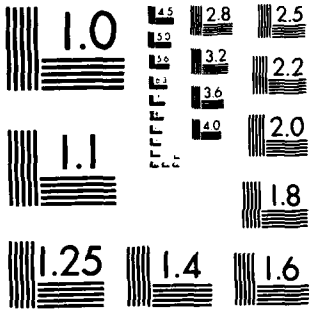
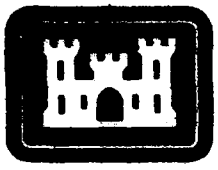




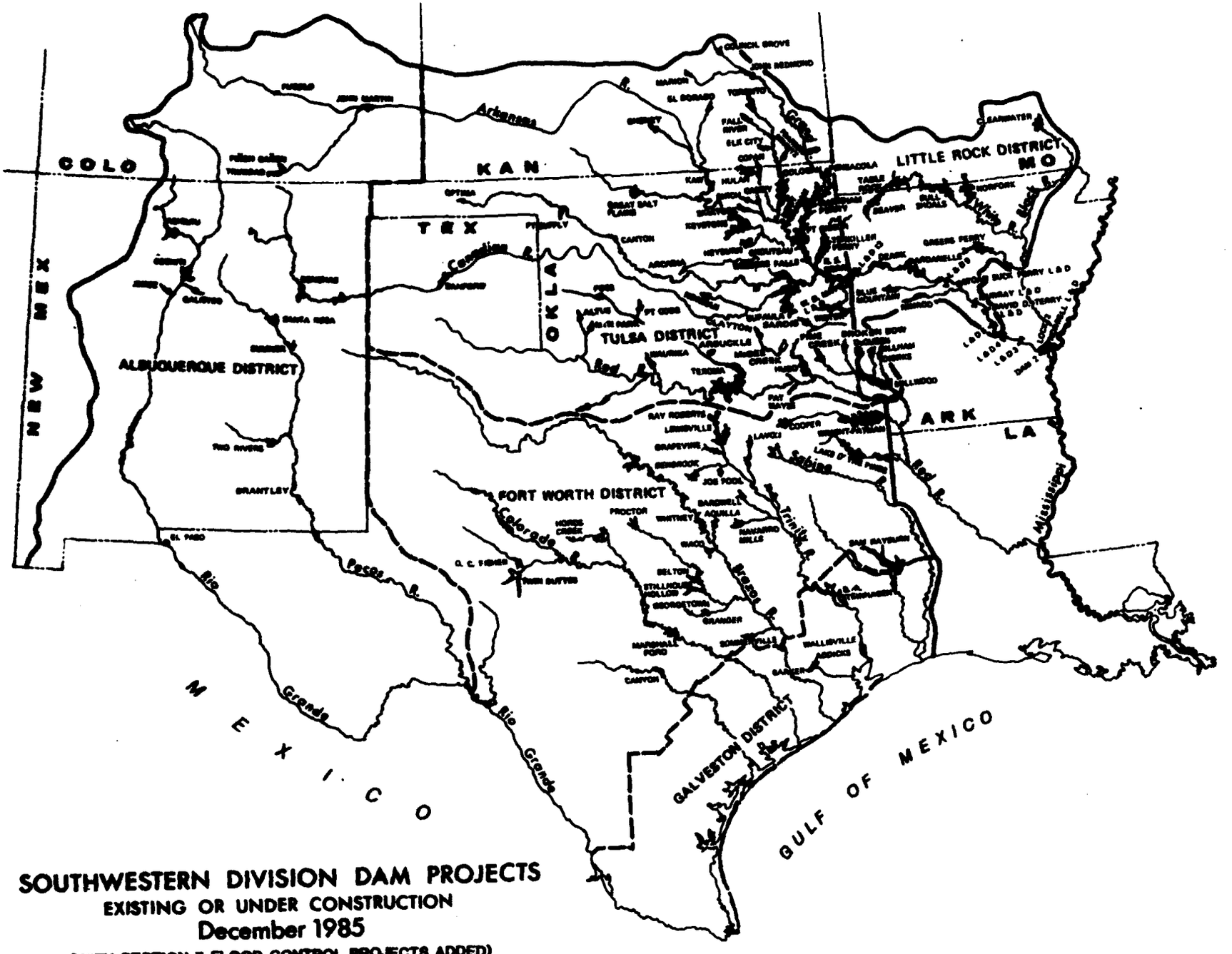


US Army Corps of Engineers
Southwestern Division
Reservoir Control Center

Annual Report 1985

January 1986

THE PACESETTER DIVISION



SOUTHWESTERN DIVISION DAM PROJECTS

EXISTING OR UNDER CONSTRUCTION

December 1985

(WITH SECTION 7 FLOOD CONTROL PROJECTS ADDED)

Unclassified

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Water control manuals
Water quality activities
Sediment activities
Data collection and management
Water control automated data system

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report presents activities and accomplishments of the Southwestern Division (SWD) as related to reservoir regulation and water management activities for fiscal year 1985. Also presents detailed summaries of reservoir conditions, water quality activities, and coordinating activities with other Federal and non-Federal basin interests groups.

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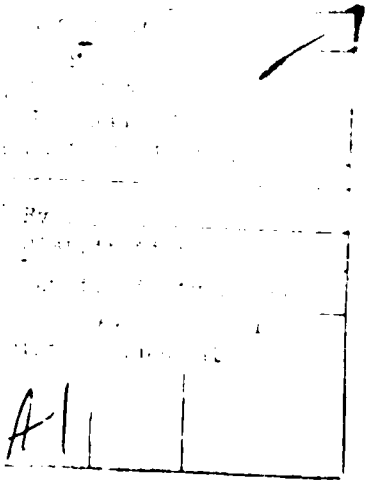


RESERVOIR CONTROL CENTER

1985 ANNUAL REPORT

SECTION I - INTRODUCTION

SECTION I - INTRODUCTION

1. PURPOSE OF REPORT. This report presents activities and accomplishments of the Southwestern Division (SWD) as related to reservoir regulation and water management activities throughout FY 1985. Detailed summaries of reservoir conditions, water quality activities, minutes of coordinating committee meetings and minutes of the annual RCC meeting and the Hydraulic Section meeting are also included.

This report is prepared in conformance with ER 1110-2-1400, 24 April 1970, Reservoir Control Centers, paragraph 12c.

2. REFERENCE. Reservoir Control Center (RCC) - SWD Guidance Memorandum, dated June 1971, approved by the Chief of Engineers as a general basis for the RCC's activities.

3. OBJECTIVES OF THE RESERVOIR CONTROL CENTER. The SWD RCC was established in 1967 by the Chief of Engineers to improve capabilities of the Corps of Engineers to perform its civil works mission as related to operation of reservoirs. The SWD RCC carries out its responsibilities by:

a. Organizing coordinating committees and/or participating in committees to accomplish mutual understanding among water interests regarding use and regulation of water resources.

b. Providing interbasin coordination of day-to-day regulation needs for river systems for all purposes.

c. Surveillance of daily operations and continuous analysis of project needs.

d. Furnishing technical assistance to personnel of district offices in related efforts to improve the reliability of regulations and hydrologic determinations.

SECTION II - WATER CONTROL ACTIVITIES IN SWD

SECTION II - WATER CONTROL ACTIVITIES IN SWD

1. RESERVOIR REGULATION

a. **Lake Regulation During FY 85.** Lake regulation activities for Division lakes and Section 7 lakes during FY 85 are summarized in Section VI of this report. Operational data summaries for all of the SWD projects, including Section 7, are shown in tabular form, in Section VII. An index, by basin, to these tables is included which also lists pertinent data for each project. Also included is a listing in alphabetical order giving names of both the lake and dam where different.

b. **Regulation Plans.** "Existing condition" simulations using current operating policy were executed and verified for the White River and the Red River Sumulation Models. A study was made using the Arkansas River Model to investigate a regulation plan for the Ramona gage using an equivalent storage in Hulah and Copan Reservoirs. A study was also made on the Arkansas River Model to evaluate the effects of providing a 50,000 cfs bench at the Van Buren gage to accomodate navigtion interest. The collection of hydrologic data for the Brazos River Model and current economic data for the White River Model was initiated to be used in future regulation studies.

c. **Water Control Manuals.** A summary entitled "Status of Water Control Manuals in SWD is included in Section IV of this report. The summary shows the status and completion schedule through FY 1988 for manuals on 118 lakes and 16 river systems and subsystems. At the end of FY 1985, there were 93 Corps of Engineers projects (76 lakes and 17 locks and dams) and 16 Section 7 lakes in operation in SWD.

During FY 1985, the SWD Reservoir Control Center received and reviewed eight water control manuals that were submitted by the districts in the form of new manuals, revisions to old manuals and plans. The schedule for FY 1986 includes the development of eight new manuals, the revision of manuals for five projects and one project plan.

d. **Section 7 Project Regulation.** Within SWD there are 16 existing reservoirs owned and operated by other agencies. Presently the Bureau of Reclamation is constructing two additional reservoirs. McGee Creek Dam to be located on Muddy Boggy Creek, a tributary of the Red River, and Brantley Dam to be located on Pecos River. The flood control storage contained in these projects are regulated by the Corps in accordance with Section 7 of the Flood Control Act of 1944. The districts are continuing their efforts to bring the manuals and regulation plans into compliance with requirements contained in paragraph 208.11, Part 208 Flood Control Regulations, Chapter II, Title 33 of the Code of Federal Regulations (41 FR 20401, May 18, 1976). Due to the varied approaches between the districts on real time regulation for Section 7 projects, SWD issued a policy letter on 21 March 1983. The purpose of the letter was to supersede previous SWD guidance and to provide current policies on Section 7 projects. This letter and subsequent letters have been issued to the districts requesting that policy on Section 7 projects be coordinated with project owners and that finalizing of water control manuals for existing projects should be expedited.

2. SOUTHWESTERN DIVISION WATER QUALITY PROGRAM AND ACTIVITIES.

a. **Responsibilities.** The Water Management Branch is assigned the responsibilities to coordinate and direct activities in SWD in the water quality field. This provides for water quality objectives being included as an effective part of our total water management program. Specific activities in the water quality program are as follows:

(1) Conduct technical studies and provide guidance on water quality control.

(2) Review and provide technical assistance in programs for predicting the natural and modified water quality in impoundments, rivers, coastal areas, and estuaries for project planning, design, and regulation activities.

(3) Review and provide technical assistance on project design and reservoir regulation studies in connection with water quality control performed within the division, including multiple level outlet facilities, reservoir simulation studies, reregulation structures, and release reoxygenation systems.

(4) Provide coordination support in interagency liasion as related to water quality control through reservoir regulation, including formulation of operating plans and cooperative data collection programs.

(5) Coordinate with Planning and Construction-Operations Divisions, and the districts on SWD water quality investigation programs.

(6) In coordination with the Geotechnical and Materials Branch, manage the water quality investigation activities of the division laboratory.

(7) Responsible for technical engineering solutions to water quality problems in existing projects; reviewing, coordinating, and acting as consultants to other engineering and planning elements in the division office and district offices.

(8) Coordination of division actions required by ER 1130-2-334 for reporting of water quality management of Corps projects.

b. **Organization.**

(1) **Division.** Water quality activities in SWD are coordinated by the Water Management Branch. These duties require the part-time efforts of three engineers. One of these, Mr. Charles Sullivan, Chief, RCC, is a member of the OCE Committee on Water Quality.

(2) **Districts.** Presently the organizations for water quality management vary within the districts. In all of the districts, water quality associated with planning and design of the projects is coordinated by organizational elements within the Engineering or Planning Divisions. In two of the districts the monitoring and reporting specifically required by ER 1130-2-334 and that required for dredging and other construction are done by the Construction and Operations Divisions.

(3) **Laboratory.** The division laboratory is fully staffed and equipped to conduct the tests of water usually required by the districts for use in planning, design, construction, and operation of the projects.

c. **Special Activities in FY 85.**

(1) **Specific Project Problems.** Water quality related problems and activities at individual projects are discussed in the district reports.

(2) **Water Quality Management Reports.** Water quality management reports were completed for one additional project in FY 85. Water quality Management reports are now available on 13 SWD projects.

(3) **Base Line Data.** Base line data acquisition was initiated at two additional SWD reservoir projects in FY 85. As of the end of the year base line data has been obtained at over 40 reservoirs. Our goal in this program is to develop a water quality data base for all SWD reservoir projects.

(4) **Table Rock Dissolved Oxygen.** Little Rock District completed the initial draft report entitled Table Rock Dam and Lake Dissolved Oxygen Study. The study was forwarded to OCE with SWD's recommendation to include the modifications in the major rehabilitation program.

(5) **Cooper Lake Studies.** A heat budget analysis of the proposed Cooper Lake was completed.

d. **Long-Term Goals.** The following are presently considered as long-term continuous goals of this division, and consequently the Water Management Branch, in the water quality field.

(1) To obtain sufficient water quality information from all of our projects to determine whether all state standards and environmental objectives can be met without adverse impact on authorized uses.

(2) To promote the organization of effective water quality elements in the division and districts to obtain the maximum coordination for handling all water quality matters in the division.

(3) Provide helpful and thorough guidance to the districts on water quality matters.

e. **Immediate Goals.** The following actions have been scheduled for accomplishment in the near future:

(1) Continue the present intensive monitoring program for SWD reservoirs. This ongoing program will be continued until base line data are available for all SWD reservoirs.

(2) Review the basic water quality monitoring program this year.

3. **SWD Sediment Program and Activities.** Sediment activities for the year included field surveys for three reservoir resurveys, resurvey of 62 sediment ranges along the McClellan-Kerr Arkansas River Navigation Project plus Pool 13 and completion of the original sedimentation and degredation range survey for Skiatook Lake. Reservoir Sediment Data Summaries (Form 1778's) of the results of resurveys for Marion Lake was

received. Six reservoir sediment resurveys are scheduled for FY 86 but funding has been approved for only four of the projects. Reconnaissance surveys were conducted at several other SWD projects.

4. DATA COLLECTION AND MANAGEMENT.

a. **Stream Gaging Program.** Much of the data required for regulation, investigation and design of water resources projects result from the reporting and measurement of flow, water quality, and sediment. Most of these data are obtained through a Cooperative Stream Gaging Program between the Corps and the USGS. During FY 1985 the SWD-USGS cooperative program contained 499 surface water stations, 36 water quality stations, and 55 suspended sediment stations. An additional 102 stations were operated independently by the district Corps offices. In FY 85, the total cost of the SWD program was $2.0 million with $1.9 million being transferred to the USGS. The following tabulation shows a breakdown of the program by class of funds used to finance the program.

Class of Funds	C of E Cost ($1,000)
Survey Investigation	46
General Coverage	65
Planning	17
Operation & Maintenance	1,767
New Work & Construction	102
Total	1,997

b. **Cooperative Reporting Networks.** The National Weather Service (NWS) and the Corps of Engineers began their 48th year of cooperation in establishing and operating networks of river and/or rainfall reporting stations. Reports from these stations supplement those stations that are maintained by the NWS which are made available to the Corps of Engineers for flood control operations and flood forecasting. Data from these networks are transmitted to the Corps of Engineers district and division offices via telephone and computer interface from the NWS collection office. A direct interface between the NWS S/140 computers located in the Fort Worth Texas and Tulsa Oklahoma NWS River Forecast Centers and the WCDS Harris carries hydrological reports, radar, and other data essential to our water control management functions. These data include detailed precipatation reports, river stage information, warnings and descriptions of severe storms and floods, and river forecasts developed by the NWS. SWDO also maintains a weather NAFAX machine which receives satellite pictures, radar plots, 24-hour rainfall maps and other weather maps.

The estimated FY 1985 cost for SWD responsibilities in supporting 481 rainfall stations in the Cooperative Reporting Networks was $171,200.

c. **Current Monitoring System.** In June 1982 the RCC began using the Water Control Data System (Harris Computer) located in the Southwestern Division office, for computations that are necessary in the RCC's daily water control activities. Harris H-1000 minicomputers have been installed in the SWDO, Tulsa District, Fort Worth District, and Little Rock District offices as a part of the Water Control Data System. The

Albuquerque and Galveston districts operate remotely from the SWDO computer. The following paragraphs describe continued efforts in developing the total system.

d. **Water Control Data System.**

(1) The "Water Control Data System Master Plan" for SWD, dated April 1979 was approved by the Office, Chief of Engineers in June 1979 for funding and detailed design. The major components of the system are:

(a) **Remote Gaging Stations.** The system includes about 100 lake gages and 300 river gages that are to be equipped with data collection platforms (DCP) by the end of FY 1985.

(b) **Communication.** The DCP's transmit the remote gaging station data over the Geostationary Orbiting Environmental Satellite (GOES) System. Communication between the district and division data processing units will be via the division wide data communications network. A Ground Receive Station is located at Fort Worth, Texas, for receipt of the GOES transmissions.

(c) **Data Acquisition and Processing Equipment.** The Water Control Data System dedicated to water control activities contains minicomputers (Harris 1000's) located at the division office and three of the five district offices. Two of the district offices and the division office share one computer. The hardware at each site is compatible in order to allow the use of common software and data exchange between offices. The data bases at each district office will be available to the division office. The data base uses the "TOTAL" data base management system and utilizes the SHEF code for data exchange with the National Weather Service.

(d) **Data Display and Distribution.** Data is displayed in individual offices with monocrome and color graphic CRT's, plotters, and printers. Graphic applications programs utilize "TEMPLATE" Software which is licensed by Megatek Corporation. Provisions are being made to exchange data with other water management cooperators. Examples of cooperative data exchange requirements are the Office of Chief Engineers, Lower Mississippi Valley Division (LMVD), National Weather Service, Southwestern Power Administration (SWPA), state and local river authorities or agencies.

(2) A Ground Receive Station (GRS) for the SWD system was installed at the Federal Center in Fort Worth, Texas, in September 1983. This is a Synergetics Model 10C direct Readout Ground Receive Station equipped with 2 antennas (one for GOES east and one for GOES west). Both dial-up and direct line access is provided between the GRS and the WCDS computers.

(3) A Water Control Data System Steering Committee was formed in July 1983 for the purpose of guiding the development of the WCDS software. The steering Committee has the responsibility for approving plans and schedules, monitoring progress, assigning responsibilities to group leaders, and coordinating with OCE and other districts. The Steering Committee is chaired by the Chief of The SWD Water Management Branch, with members consisting of chiefs of district hyraulics branches and the three group chairmen functioning under the Steering Committee. These three groups are the System Software group, chaired by the Chief of the SWD Automatic Data Processing Center

(ADP); the applications Software Group chaired by the Chief of the SWD Hydrologic Engineering Section; and the Users Group, chaired by the Chief of the SWD Reservoir Control Center. Each of these groups contain members from District elements.

(4) At the end of FY 85, there were 380 DCP's installed. There are also 26 gages equipped with DARDC's. During the fiscal year (as part of the Corps wide procurement contract) the old H-100 & H-500 computers were replaced by Harris 1000 computers.

e. **Cooperative Data Bank and Forecasting Activity.** During the past year, RCC has continued to participate in and encourage the advancement of programs for automated data collection and interagency cooperation in forecasting activity and data bank utilization. Currently, SWD maintains a data bank on the Water Control Data System computer for Daily Lake Reports, Daily Power Generation Reports, and Daily River Reports. These data banks are updated daily and the data are maintained until the end of the month then used for monthly summaries. These data, with several district auxiliary programs and data bases, have been used to make forecasts and reports available for exchange as needed between the districts and SWDO. In addition, the data are made available to other users which have a need to be aware of the water control activities on a real-time basis. These users include SWPA, NWS, LMVD, and OCE. SWD has also participated in a program to develop a data base (DATSYS) for water control information for the Mississippi River Basin. SWD districts have participated in storing data in the EPA STORET and USGS WATSTORE data banks. Both of these systems have also been used for retrieving data. The Little Rock District has placed sediment data in the WATSTORE data system.

5. COORDINATION WITH WATER MANAGEMENT INTERESTS.

a. **General.** The benefits deriving from personal contact with other persons associated with water management activities are well recognized by the RCC. For this reason, special emphasis has been placed on maintaining this personal contact through meetings and workshops sponsored by the districts and the RCC with the marketing agency, project personnel, river basin authorities, other RCC's, the Chief's office and others.

(1) The Hydrologic Engineering Section and the Hydraulics Section (other sections in the Water Management Branch) furnish support to the RCC. The Hydrologic Engineering Section conducts systems studies of reservoir regulation and the Hydraulics Section reviews studies on sediment and water quality activities.

(2) A meeting of lake regulation personnel of each of the districts and the RCC is held annually at the division Reservoir Control Center for the purpose of discussing timely topics and exchanging information. Normally the Hydrologic Engineering and the Hydraulics Sections will hold joint meetings with the RCC. This year's meeting included the RCC and the Hydraulics Section. The minutes of the 12 and 13 November 1985 meetings are included in Section VIII.

b. **Agency Coordination.**

(1) **Trinity River Basin Water Management Interests Group.** In order to provide a means for exchanging ideas and coordinating the interests of local, State and Federal agencies and private companies in the regulation and development of water resources of

the Trinity River Basin, Texas the RCC has initiated and sponsored meetings of the Trinity River Water Basin Management Interests Group. A meeting was held during October 1985.

The fifteenth annual meeting of this group was held on 29 October 1985. Attendance included 30 persons representing the State of Texas, several municipalities, water districts, companies, and agencies of the Federal Government.

(2) **Cooperation with Lower Mississippi Valley Division.** The SWD RCC continues its cooperation with LMVD and provides observed, as well as forecasted data significant to the water management activities in LMVD. Exchange of data within the Mississippi River Basin has been improved by the development of a Data Management System by HEC on the OCE computer for critical river stations within the basin. Both forecasted and current data can be retrieved for individual division and district use.

(3) **Cooperation with Federal Energy Regulatory Commission.** Periodic formal and informal contact through meetings sponsored by the RCC keeps Corps and FERC staff members informed on trends and problems associated with production of hydroelectric power. The RCC also coordinates activities on FERC license applications for nonfederal hydropowder development at SWD Corps project.

(4) **Cooperation with Southwestern Power Adminisration.** The SWPA is an agency of the United States, established in the Department of the Energy, to execute the purposes of the Flood Control Act of 1944 with respect to the disposition of the electric power and energy made available from the reservoir projects under control of the Department of the Army in the area comprising all of Arkansas and Louisiana and portions of Missouri, Kansas, Texas and Oklahoma. The scheduling of release for hydroelectric power production from the 17 Corps of Engineers projects within SWD has a significant effect on the overall water management activities in the division. Therefore, close cooperation and continuous communication between the Corps and SWPA are mandatory. A Memorandum of Understanding was signed by the SWPA and the Corps of Engineers in 1980. SWPA and SWD are in the process of finializing a detail operating arrangement to assist in the operations of hydropower projects within SWD. Specific activities included in the operating arrangement for cooperation between SWPA and RCC are monthly scheduling of power production, preparation of data for reports to the Federal Energy Regulatory Commission (FERC), and daily coordination of routine data on current conditions, inflow forecasts, and release schedules. The RCC has taken every opportunity to improve and strengthen relations with SWPA through correspondence, regularly scheduled and special meetings, providing access to our time-share systems, and by special studies aimed at improving energy production and scheduling at SWD power projects.

(5) **National Weather Service.** Future workshops will be needed for establishing criteria and implementation procedures for comprehensive interagency data banks. The automated data collection and handling equipment being acquired by the Corps and NWS will require extensive coordinating efforts over the next few years. During the past year several meetings between the Corps and NWS were held to establish procedures for computer to computer exchange of hydrometerological data.

SECTION III - FACILITIES AND PERSONNEL

SECTION III - FACILITIES AND PERSONNEL

1. **Facilities.**

a. **Office Space.** SWD personnel occupies quarters in the Santa Fe Building, 1114 Commerce Street, Dallas, Texas. Space occupied by the RCC includes an open-space working area, and an equipment room.

b. **Display Facilities.** All of the display equipment used for conferences and for briefing of higher authorities is located in the Engineering Division conference room. This equipment includes a triple duty wall display unit containing metal chalkboards, vinyl covered cork boards, and white metal panels adequate for grease pencil or for projection screen; various projection equipment, a projection screen, and a large screen display unit driven by an IBM PC.

c. **Communications Equipment.** The equipment room contains a multiplexor, two dot-matrix hard-copy TTY terminals; one letter quality terminal, a Tektronix color graphics terminal with plotter, printer, and digitizing tablet, magnetic tape storage, and a weather FAX machine. The TTY terminals are used for access of the Harris, WRDC and other computer facilities. The SWD Ground Receive Station (for receipt of remote sensor information via GOES) is located at the Federal Center in Fort Worth, Texas.

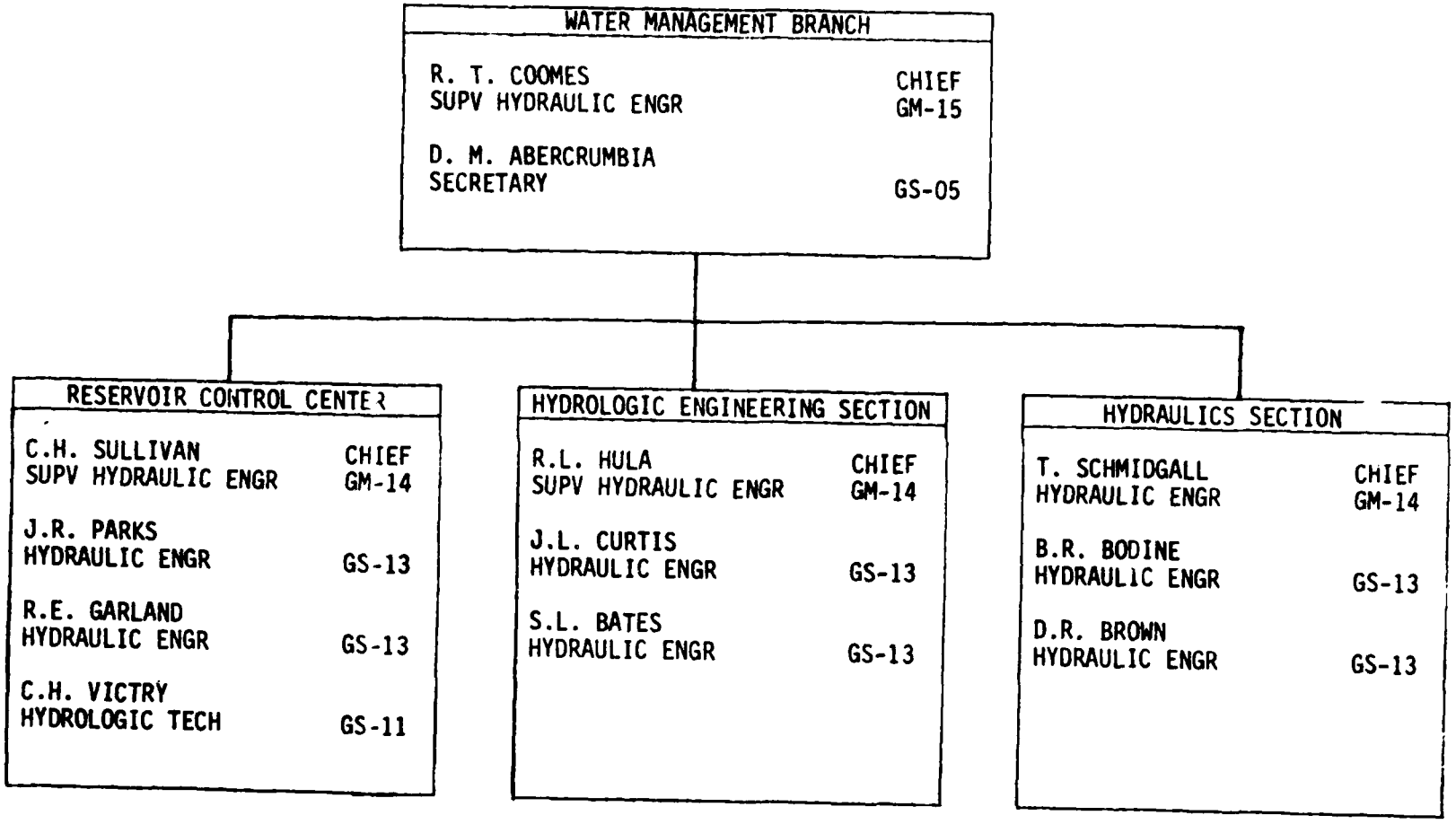
2. **Personnel.**

a. **Staff.** The authorized staff of the RCC consists of one supervisory hydraulic engineer, two hydraulic engineers and one hydrologic technican. The RCC is supported in technical studies by the Hydrologic Engineering and the Hydraulics Sections. The current organization chart for the SWD Water Management Branch is shown in figure 1.

b. **Training.** The RCC periodically assesses the training needs of its personnel and schedules that training which is required and desirable for maintaining expertise and capability to fulfull its mission. Scheduled training for the immediate future includes various hydrologic and management courses. Additional training objectives are accomplished through active participation and leadership by RCC personnel in committees such as the Trinity River Basin Water Management Interests Groups and the Corps of Engineers Committee on Water Quality.

DECEMBER 1985

Figure 1



SECTION IV - STATUS OF RESERVOIR WATER CONTROL MANUALS IN SWD

STATUS OF WATER CONTROL MANUALS IN SWD
(Report Control Symbol DAEN-CWE-16) Revised: FEBRUARY 1986

RESERVOIR	STREAM	OWNER	DIST	WATER CONTROL MANUAL SUBMITTED	SCHEDULED THRU FY 88	APPROVED	
WHITE RIV MASTER							
BEAVER	WHITE RIV BASIN	CE	LRD	DEC 54 F	NOV 86 U	DEC 55 OCE	
TABLE ROCK	WHITE RIV BASIN	CE	LRD	OCT 66 F		JAN 67 OCE	
BULL SHOALS	WHITE RIVER BASIN	CE	LRD	OCT 66 F		JAN 67 OCE	
NORFORK	WHITE RIVER BASIN	CE	LRD	OCT 66 F		JAN 67 OCE	
CLEARWATER	BLACK RIVER	CE	LRD	OCT 66 F		JAN 67 OCE	
GREERS FERRY	LITTLE RED RIVER	CE	LRD	JAN 73 U		FEB 73 SWD	P#
				OCT 65 F		JUN 66 OCE	
ARKANSAS MASTER							
PUEBLO (1)	ARKANSAS RIVER	CE	AD	APR 69 F		JUN 70 OCE	
TRINIDAD	PURGATORIE RIVER	BR	AD	DEC 77 F		JUN 84 SWD	
JOHN MARTIN	ARKANSAS RIVER	CE	AD	FEB 85 U		SEP 85 SWD	
		CE	AD	NOV 82 U		JAN 83 SWD	AR
ARKANSAS MASTER							
CHENEY (1)	N.F.NINNESCAH	CE	TD	APR 76 U		SEP 80 SWD	
EL DORADO	WALNUT RIVER	BR	TD	OCT 65	SEP 88 U	MAR 66 OCE	AR
KAW	ARKANSAS RIVER	CE	TD	FEB 83 F		FEB 83 SWD	
GREAT SALT PLAINS	SALT FORK ARK	CE	TD	DEC 77 F		JAN 78 SWD	
KEYSTONE	ARKANSAS RIVER	CE	TD	NOV 66 F	SEP 88 U	APR 67 OCE	
HEYBURN	POLECAT CREEK	CE	TD	NOV 63 F	SEP 86 U	APR 65 OCE	
		CE	TD	JUL 84 U		DEC 84 SWD	
VERDIGRIS SYSTEM							
TORONTO	VERDIGRIS RIVER	CE	TD	JUN 66 F	MAR 87 U	AUG 66 OCE	
FALL RIVER	FALL RIVER	CE	TD	JUN 66 F	SEP 87 U	AUG 66 OCE	
ELK CITY	ELK RIVER	CE	TD	JUN 66 F	MAR 88 U	AUG 66 OCE	
PEARSON-SKUBITZ-BIG HILL	BIG HILL CREEK	CE	TD	AUG 82		SEP 82 SWD	AR
OOLOGAH	VERDIGRIS RIVER	CE	TD	DEC 75 U	SEP 88	JAN 76 SWD	AR
COPAN	CANEY RIVER	CE	TD	NOV 82 F		MAR 83 SWD	
HULAH	CANEY RIVER	CE	TD	OCT 68	SEP 87	JUN 69 OCE	AR
BIRCH	BIRD CREEK	CE	TD	AUG 81 F		SEP 81 SWD	
SKIATOOK	HOMINY CREEK	CE	TD	APR 84 F		DEC 84 SWD	

STATUS OF WATER CONTROL MANUALS IN SWD
(Report Control Symbol DAEN-CWE-16) Revised: FEBRUARY 1986

RESERVOIR	STREAM	OWNER	DIST	WATER CONTROL MANUAL SUBMITTED	SCHEDULED THRU FY 88	APPROVED	
UPPER GRAND SYS							
COUNCIL GROVE	NEOSHO RIVER	CE	TD	APR 74 F		MAY 74 SWD	
MARION	COTTONWOOD RIVER	CE	TD	JUL 74 F		AUG 74 SWD	
JOHN REDMOND	NEOSHO RIVER	CE	TD	SEP 76 R			
PENSACOLA (1)	NEOSHO RIVER	GRDA	TD	SEP 64	FEB 87 R	MAR 65 OCE	AR
MARKHAM FERRY (1)	NEOSHO RIVER	GRDA	TD	SEP 64	MAR 88 R	MAR 65 OCE	AR
FORT GIBSON	NEOSHO RIVER	CE	TD	SEP 64	MAR 89 R	MAR 65 OCE	AR
TENKILLER FERRY	ILLINOIS RIVER	CE	TD	JUL 76 F		MAR 77 SWD	
CONCHAS	CANADIAN RIVER	CE	AD	JUN 67 F		JAN 68 OCE	
SANFORD (1)	CANADIAN RIVER	BR	TD	SEP 65		FEB 66 OCE	AR
NORMAN (1)	LITTLE RIVER	BR	TD	FEB 65 F	AUG 88 U	NOV 65 OCE	
OPTIMA	N. CANADIAN RIVER	CE	TD	DEC 69		FEB 70 SWD	AR
FORT SUPPLY	WOLF CREEK	CE	TD	DEC 69		FEB 70 SWD	AR
CANTON	N. CANADIAN RIVER	CE	TD	DEC 69		FEB 70 SWD	AR
ARCADIA	DEEP FORK RIVER	CE	TD	JAN 86	SEP 86	FEB 86 SWD	AR
EUFAULA	CANADIAN RIVER	CE	TD	SEP 62 F	MAR 90	NOV 63 OCE	
NEWT GRAHAM PT VI, L&D 18	ARKANSAS RIVER	CE	TD	APR 72 F			
CHOUTEAU PT V, L&D 17	ARKANSAS RIVER	CE	TD	APR 72 F		JUN 72 SWD	
WEBBERS FALLS PT IV,L&D 16	ARKANSAS RIVER	CE	TD	JUL 72 F		JUN 72 SWD	
R.S. KERR PT III, L&D 15	ARKANSAS RIVER	CE	TD	APR 72 F		JUL 72 SWD	
W.D. MAYO PT II, L&D 14	ARKANSAS RIVER	CE	TD	OCT 72		APR 72 SWD	
						JAN 73 SWD	AR
WISTER	POTEAU RIVER	CE	TD	MAR 74 F			
BLUE MOUNTAIN	PETIT JEAN	CE	LRD	FEB 68 F	SEP 87 U	JUN 74 SWD	
NIMROD	FOURCHE LA FAVE	CE	LRD	SEP 67 F		MAR 68 OCE	
						MAR 68 OCE	
LOCK & DAM 13	ARKANSAS RIVER	CE	LRD	SEP 74 F			
OZARK-JETA TAYLOR	ARKANSAS RIVER	CE	LRD	SEP 74 F		SEP 74 SWD	
DARDANELLE	ARKANSAS RIVER	CE	LRD	MAR 76 F		SEP 74 SWD	
LOCK & DAM 9	ARKANSAS RIVER	CE	LRD	MAR 76 F		APR 76 SWD	
						APR 76 SWD	

STATUS OF WATER CONTROL MANUALS IN SWD
(Report Control Symbol DAEN-CWE-16) Revised: FEBRUARY 1985

RESERVOIR	STREAM	OWNER	DIST	WATER CONTROL MANUAL SUBMITTED	SCHEDULED THRU FY 88	APPROVED
LOCK & DAM 8 TOAD SUCK FERRY	ARKANSAS RIVER	CE	LRD	JUL 74 F		SEP 74 SWD
LOCK & DAM 7 MURRAY	ARKANSAS RIVER	CE	LRD	JUL 74 F		SEP 74 SWD
LOCK & DAM 6 DAVID D. TERRY	ARKANSAS RIVER	CE	LRD	OCT 71 F		SEP 74 SWD
LOCK & DAM 5	ARKANSAS RIVER	CE	LRD	OCT 71 F		SEP 74 SWD
LOCK & DAM 4	ARKANSAS RIVER	CE	LRD	OCT 71 F		SEP 74 SWD
LOCK & DAM 3	ARKANSAS RIVER	CE	LRD	OCT 71 F		SEP 74 SWD
LOCK & DAM 2 (ARK POST CANAL)	ARKANSAS RIVER	CE	LRD	OCT 71 F		SEP 74 SWD
RED RIVER MASTER		CE	TD	NOV 62	DEC 89 U	FEB 63 OCE AR
ALTUS (1)	N. FORK RED	BR	TD	DEC 67 F	SEP 89 R	OCT 68 OCE
MOUNTAIN PARK (1)	OTTER CREEK	BR	TD	JAN 74	JUN 88 R	MAR 74 SWD R*
TRUSCOTT BRINE LAKE	BLUFF CREEK	CE	TD		AUG 84	
LAKE KEMP (1)	WICHITA RIVER	WCID	TD	MAY 73 F		JUN 73 SWD
WAURIKA	BEAVER CREEK	CE	TD	APR 77 F		APR 77 SWD
FOSS (1)	WASHITA RIVER	BR	TD	FEB 61 F	JUL 89 U	MAY 61 OCE
FORT COBB (1)	COBB CREEK	BR	TD	JAN 60 F	JUN 89 U	MAR 61 OCE
ARBUCKLE (1)	ROCK CREEK	BR	TD	NOV 66		SEP 67 OCE AR
TEXOMA	RED RIVER	CE	TD	JUN 75 F	JUN 91 U	APR 84 SWD
PAT MAYSE	SANDERS CREEK	CE	TD	DEC 66 F		OCT 67 OCE
SARDIS	JACKFORK CREEK	CE	TD	JAN 84 F		AUG 84 SWD
MCGEE CREEK (1)	MUDDY BOGGY CREEK	BR	TD	JUL 85	JUL 86	JUL 85 SWD R*
HUGO	KIAMICHI RIVER	CE	TD	MAY 82		JUL 82 SWD AR
LITTLE RIV SYS						
PINE CREEK	LITTLE RIVER	CE	TD	MAY 74		JUL 74 SWD AR
BROKEN BOW	MOUNTAIN FORK	CE	TD	JUL 74 F		NOV 74 SWD
DEQUEEN	ROLLING FORK	CE	LRD	MAY 76 F		JUN 76 SWD R
GILLHAM	COSSATOT RIVER	CE	LRD	MAR 67	JUN 86 R	APR 81 SWD R*
DIERKS	SALINE RIVER	CE	LRD	JUN 75 F		APR 76 SWD
MILLWOOD	LITTLE RIVER	CE	TD	SEP 73 F		NOV 73 SWD

STATUS OF WATER CONTROL MANUALS IN SWD
(Report Control Symbol DAEN-CWE-16) Revised: FEBRUARY 1986

RESERVOIR	STREAM	OWNER	DIST	WATER CONTROL MANUAL SUBMITTED	SCHEDULED THUR FY 88	APPROVED	
SULPHUR RIV MASTER							
COOPER	SULPHUR RIVER	CE	FWD				
WRIGHT PATMAN	SULPHUR RIVER	CE	FWD	SEP 74 U		NOV 74 LMVD	
LAKE O' THE PINES	CYPRESS CREEK	CE	FWD	JUN 74 U		NOV 74 LMVD	
NECHES RIV MASTER		CE	FWD	MAY 62		MAR 63 OCE	AR
B. A. STEINHAGEN	NECHES RIVER	CE	FWD	JUL 51		FEB 63 OCE	AR
SAM RAYBURN	ANGELINA RIVER	CE	FWD	JAN 73 R	JUL 88	FEB 73 SWD	AR
TRINITY RIV MASTER		CE	FWD	MAY 75 F	MAY 86	MAY 75 SWD	
BENBROOK	CLEAR FORK	CE	FWD	MAY 75 F	JUL 88	MAY 75 SWD	
JOE POOL	MOUNTAIN CREEK	CE	FWD	DEC 85 F	JUL 86	JAN 86 SWD	AR
RAY ROBERTS	ELM FORK	CE	FWD	JUL 85	MAR 88	JAN 86 SWD	AR
LEWISVILLE	ELM FORK	CE	FWD	MAY 75 F	DEC 87	MAY 75 SWD	
GRAPEVINE	DENTON CREEK	CE	FWD	MAY 75 F	APR 87	MAY 75 SWD	
LAVON	EAST FORK	CE	FWD	MAY 75 F		MAY 75 SWD	
NAVARRO MILLS	RICHLAND CREEK	CE	FWD	MAY 63	1987	JUL 64 OCE	AR
BARDWELL	WAXAHACIE CREEK	CE	FWD	AUG 63	1987	JUL 65 OCE	AR
WALLISVILLE	TRINITY RIVER	CE	GD				
BUFFALO BAYOU MASTER		CE	GD				
BARKER	BUFFALO BAYOU	CE	GD	MAY 63 F		OCT 72 SWD	R
ADDICKS	BUFFALO BAYOU	CE	GD	MAY 63 F		OCT 72 SWD	R
BRAZOS RIV MASTER		CE	FWD	JAN 73		MAR 73 SWD	R*
WHITNEY	BRAZOS RIVER	CE	FWD	JAN 74 F		APR 75 SWD	
AQUILLA	AQUILLA CREEK	CE	FWD	AUG 83 F	FEB 86	MAY 84 SWD	AR
PROCTOR	LEON RIVER	CE	FWD	FEB 74 F		APR 74 SWD	
BELTON	LEON RIVER	CE	FWD	APR 76 F		MAY 76 SWD	
STILLHOUSE HOLLOW	LAMPASAS RIVER	CE	FWD	MAY 76 F		JUL 76 SWD	
GEORGETOWN	N.F.SAN GABRIEL	CE	FWD	DEC 79 F	JUL 86	JUN 80 SWD	R
GRANGER	SAN GABRIEL	CE	FWD	OCT 82	OCT 86	NOV 82 SWD	R

STATUS OF WATER CONTROL MANUALS IN SWD
(Report Control Symbol DAEN-CWE-16) Revised: FEBRUARY 1986

RESERVOIR	STREAM	OWNER	DIST	WATER CONTROL MANUAL SUBMITTED	SCHEDULED THRU FY 88	APPROVED
WACO	BOSQUE RIVER	CE	FWD	JUL 73 F		AUG 73 SWD
SOMERVILLE	YEGUA CREEK	CE	FWD	OCT 73 F		NOV 73 SWD
COLORADO RIV MASTER		CE	FWD			
HORDS CREEK	HORDS CREEK	CE	FWD	SEP 55		MAY 62 OCE AR
O.C. FISHER	N. CONCHO	CE	FWD	JAN 56		DEC 62 OCE AR
TWIN BUTTES (1)	S. CONCHO	BR	FWD	JAN 66 R		SEP 66 FR
MARSHALL FORD (1)	COLORADO RIVER	BR	FWD	DEC 79	AUG 88	MAY 80 SWD R/FR
GUADALUPE RIV MASTER		CE	FWD	OCT 63		JAN 66 OCE AR
CANYON	GUADALUPE RIVER	CE	FWD	MAR 73 R		MAY 73 SWD
RIO GRANDE MASTER		CE	AD	AUG 66 F		FEB 67 OCE
ABIQUIU	RIO CHAMA	CE	AD	APR 82 U	SEP 88 R	JUN 82 SWD
COCHITI	RIO GRANDE	CE	AD	AUG 78 F	SEP 87 U	JUN 81 SWD
GALISTEO	GALISTEO CREEK	CE	AD	MAR 68 F		APR 68 OCE
JEMEZ CANYON	JEMEZ RIVER	CE	AD	AUG 66 F		AUG 84 SWD R#
PLATORO (1)	CONEJOS RIVER	BR	AD	APR 64 F		MAY 64 OCE
PECOS RIV MASTER		CE	AD	NOV 77		NOV 77 SWD AR
SANTA ROSA	PECOS RIVER	CE	AD	DEC 79 F	SEP 88 U	SEP 81 SWD
SUMNER (1)	PECOS RIVER	BR	AD	MAR 82		JUL 84 SWD AR
TWO RIVERS	RIO HONDO	CE	AD	JUN 62 F		JUN 64 OCE
BRANTLEY (1)	PECOS RIVER	CE	AD		FEB 87	

NOTES:

(1) = Section 7 project, flood control regulation by CE.
AR = Approved, comments to be answered.
F = Complete, comments have been answered and approved.
FR = Published in Federal Register.
P = Plan.
R = Revision or answer to comments.
R# = Returned without approval.
U = Update of existing approved manual.
GRDA = Grand River Dam Authority.
WCID = Wichita County Water Improvement District.
LCRA = Lower Colorado River Authority.
BR = Bureau of Reclamation.

SECTION V - REGULATION OF MULTI-PURPOSE PROJECTS WITH HYDROPOWER

SECTION V
HYDROPOWER GENERATION
AT
SOUTHWESTERN DIVISION PROJECTS

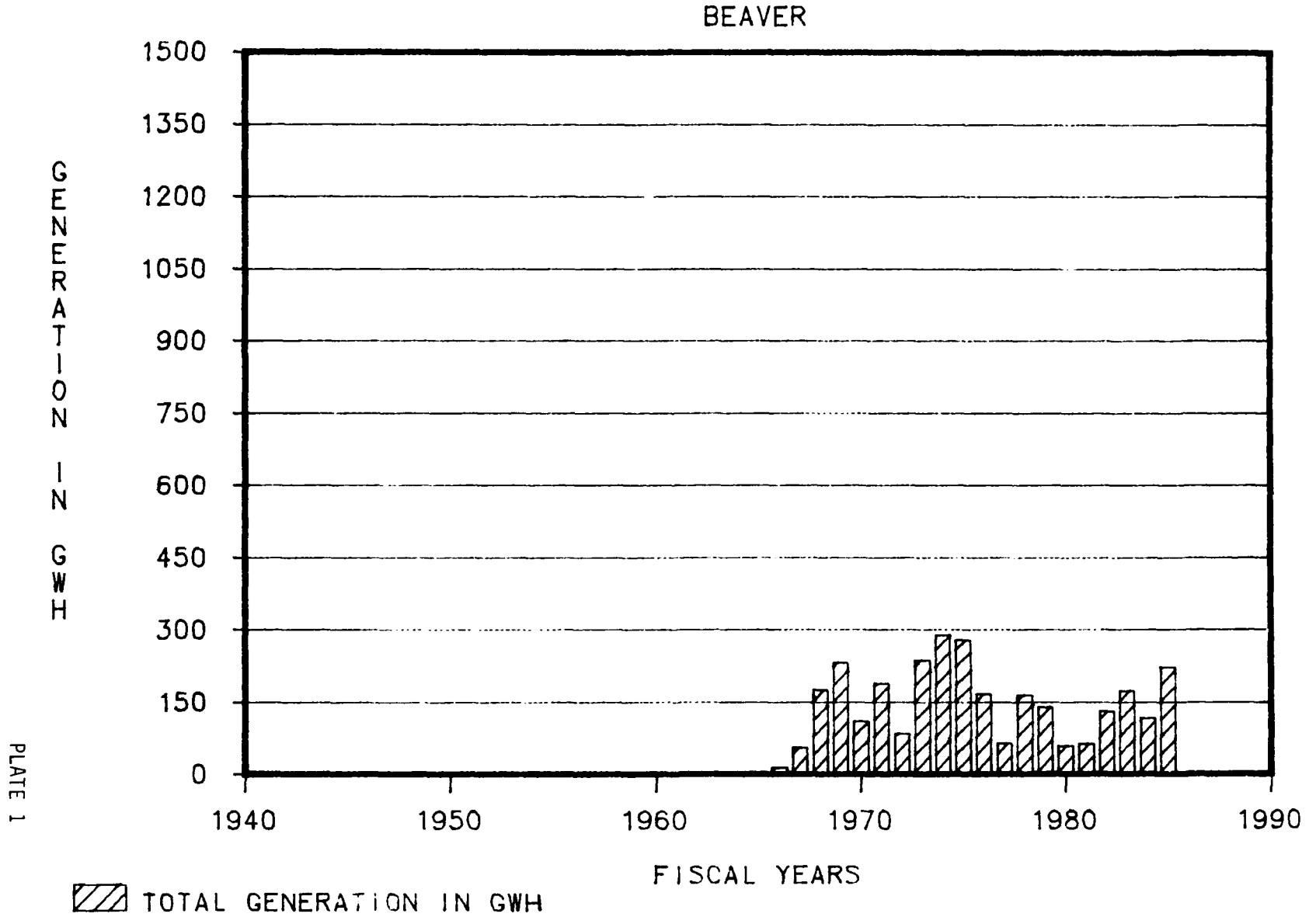
The 17 hydropower projects are listed in table 1. Generation by project for the last five fiscal years is shown in table 2. Also, generation by the projects, since impoundment, is shown on the following graphs.

TABLE 1

Projects	Basin	Stream	No. Units.	Total Capacity MW	Plate No.
Beaver	White	White	2	112	1
Table Rock	White	White	4	200	2
Bull Shoals	White	White	8	340	3
Norfork	White	North Fork	2	70	4
Greers Ferry	White	Little Red	2	96	5
Keystone	Arkansas	Arkansas	2	70	6
Ft. Gibson	Arkansas	Grand	4	45	7
Webbers Falls	Arkansas	Arkansas	3	60	8
Tenkiller Ferry	Arkansas	Illinois	2	34	9
Eufaula	Arkansas	S. Canadian	3	90	10
R.S. Kerr	Arkansas	Arkansas	4	110	11
Ozark-Jeta Taylor	Arkansas	Arkansas	5	100	12
Dardanelle	Arkansas	Arkansas	4	124	13
Denison	Red	Red	2	70	14
Broken Bow	Red	Mountain Fork	2	100	15
Sam Rayburn	Neches	Angelina	2	52	16
Whitney	Brazos	Brazos	2	30	17

TABLE 2
Fiscal Year
(in 1,000 GWH)

	1981	1982	1983	1984	1985
Beaver	63.0	130.6	173.2	116.3	222.5
Table Rock	93.3	384.0	680.2	471.2	886.0
Bull Shoals	185.1	400.9	1084.8	697.1	1397.9
Norfork	56.1	116.9	260.9	209.7	396.1
Greers Ferry	61.3	134.1	344.8	158.3	315.8
Keystone	80.1	277.0	231.2	234.4	306.5
Ft. Gibson	71.5	239.9	216.2	203.6	321.8
Webbers Falls	0	0	91.9	190.3	320.7
Tenkiller Ferry	36.7	109.7	94.8	78.3	176.3
Eufaula	47.8	354.0	239.5	195.1	360.0
R. S. Kerr	170.2	613.8	577.9	526.5	750.7
Ozark-Jeta Taylor	65.0	0	134.7	193.2	437.1
Dardanelle	283.8	705.0	656.9	595.8	823.5
Denison	148.5	303.6	188.6	198.9	343.0
Broken Bow	132.3	163.0	194.7	139.5	229.6
Sam Rayburn	39.4	57.1	174.6	125.3	97.8
Whitney	49.7	104.2	28.5	15.0	57.1


BEAVER
1500
1350
1200
1050
900
750
600
450
300
150
0
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1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 1

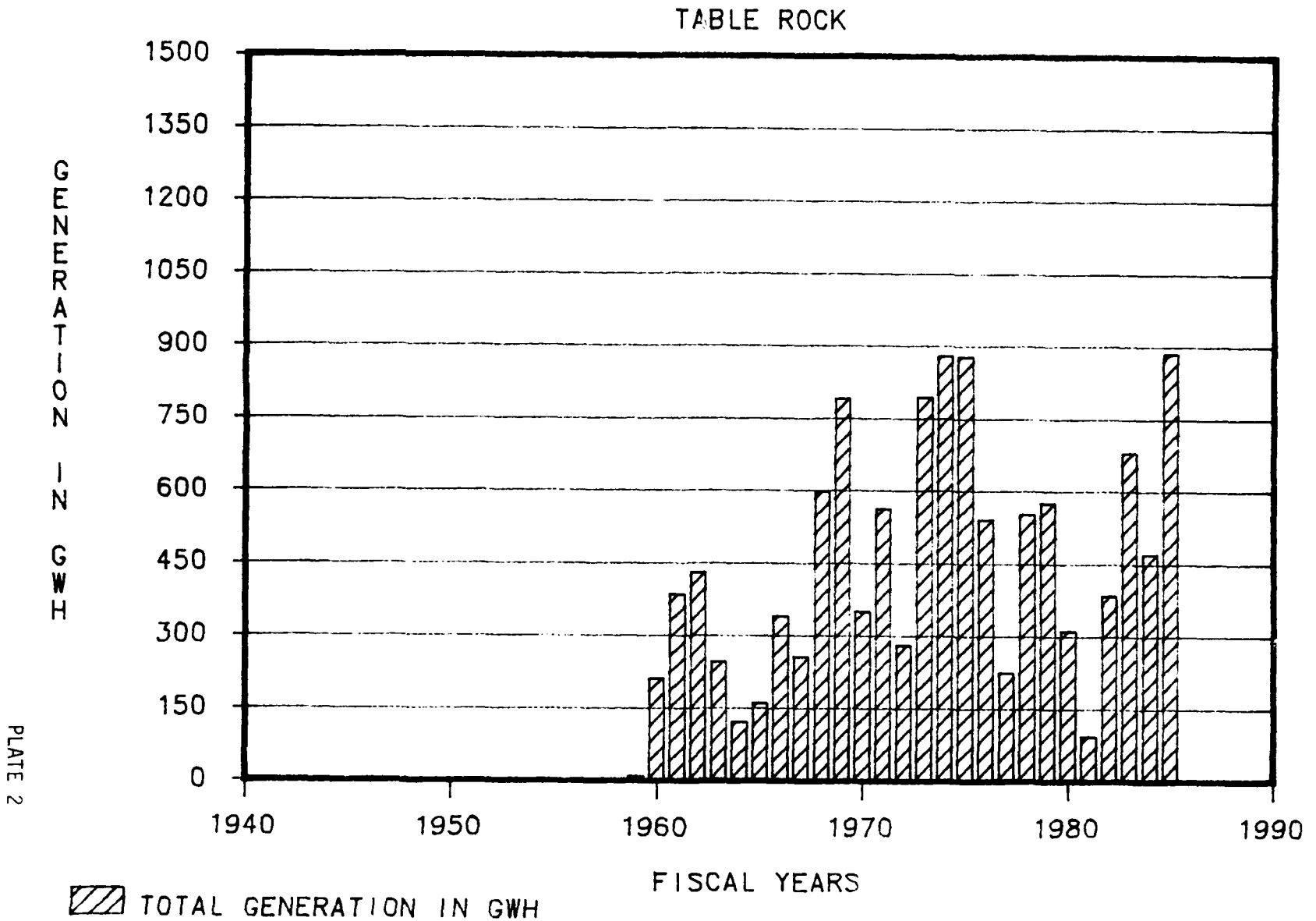
TABLE ROCK
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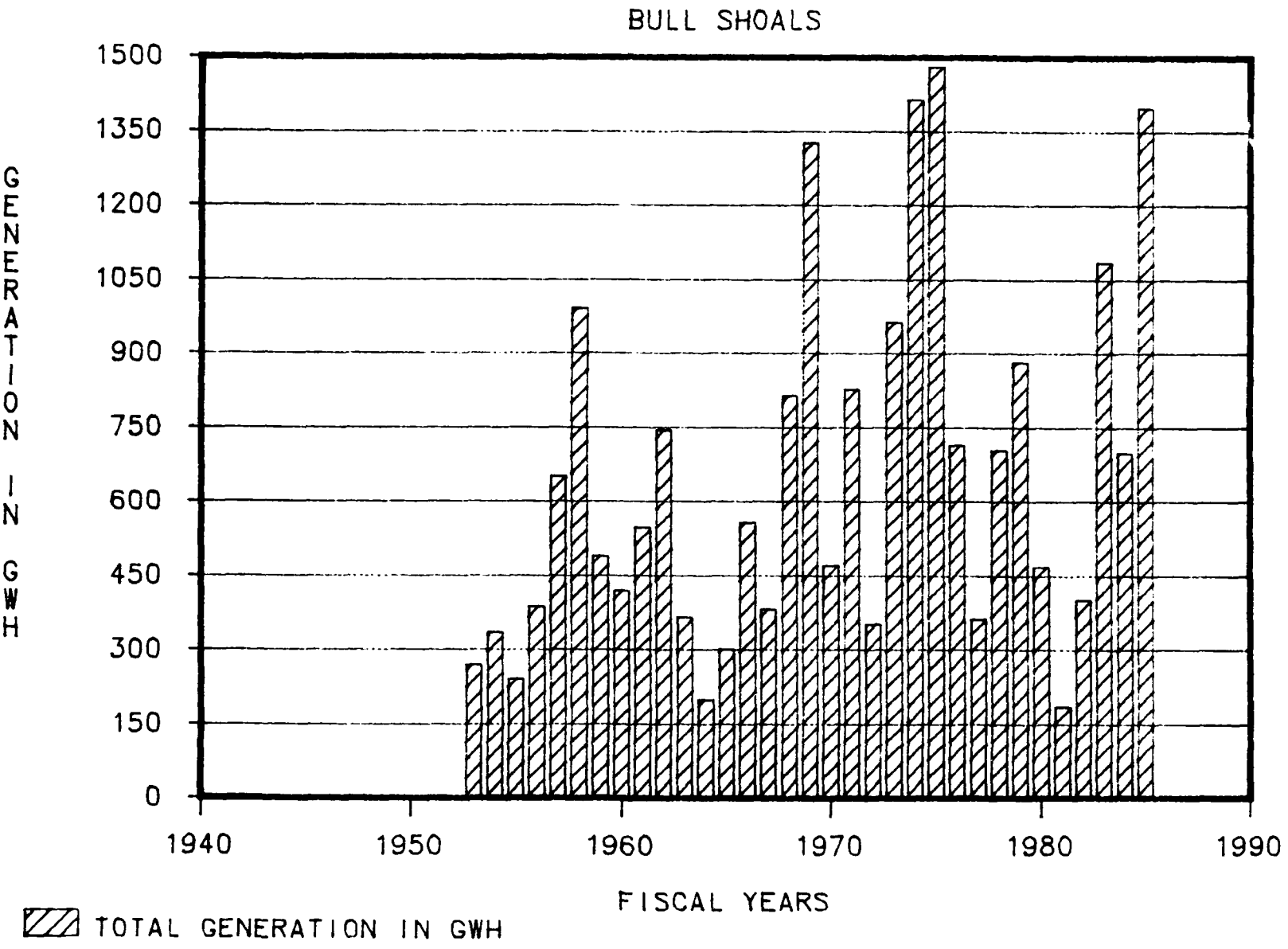
1350
1200
1050
900
750
600
450
300
150
0
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 2


BULL SHOALS
GENERATION IN GWH
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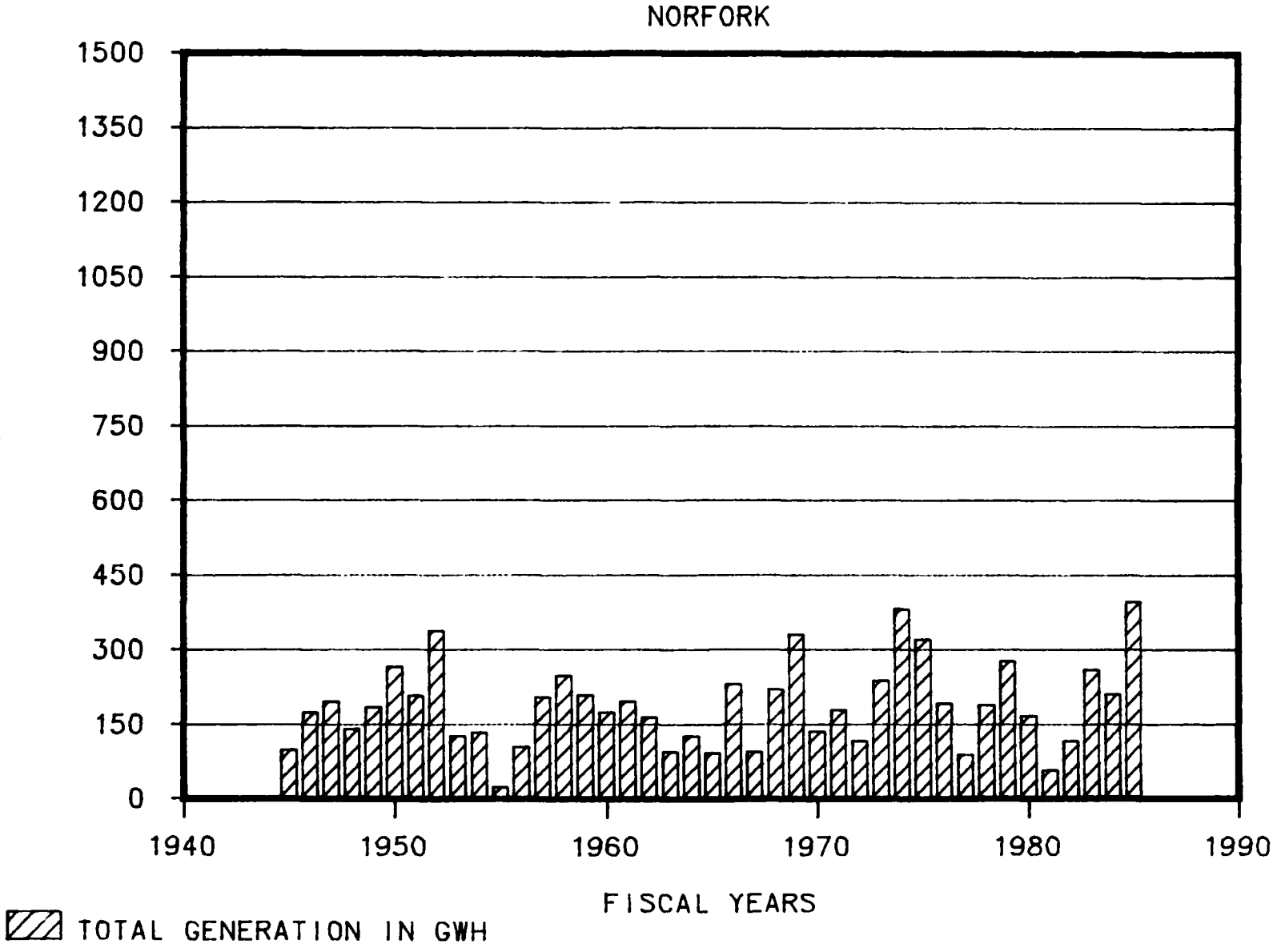
1350
1200
1050
900
750
600
450
300
150
0
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 3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1200
1050
900
750
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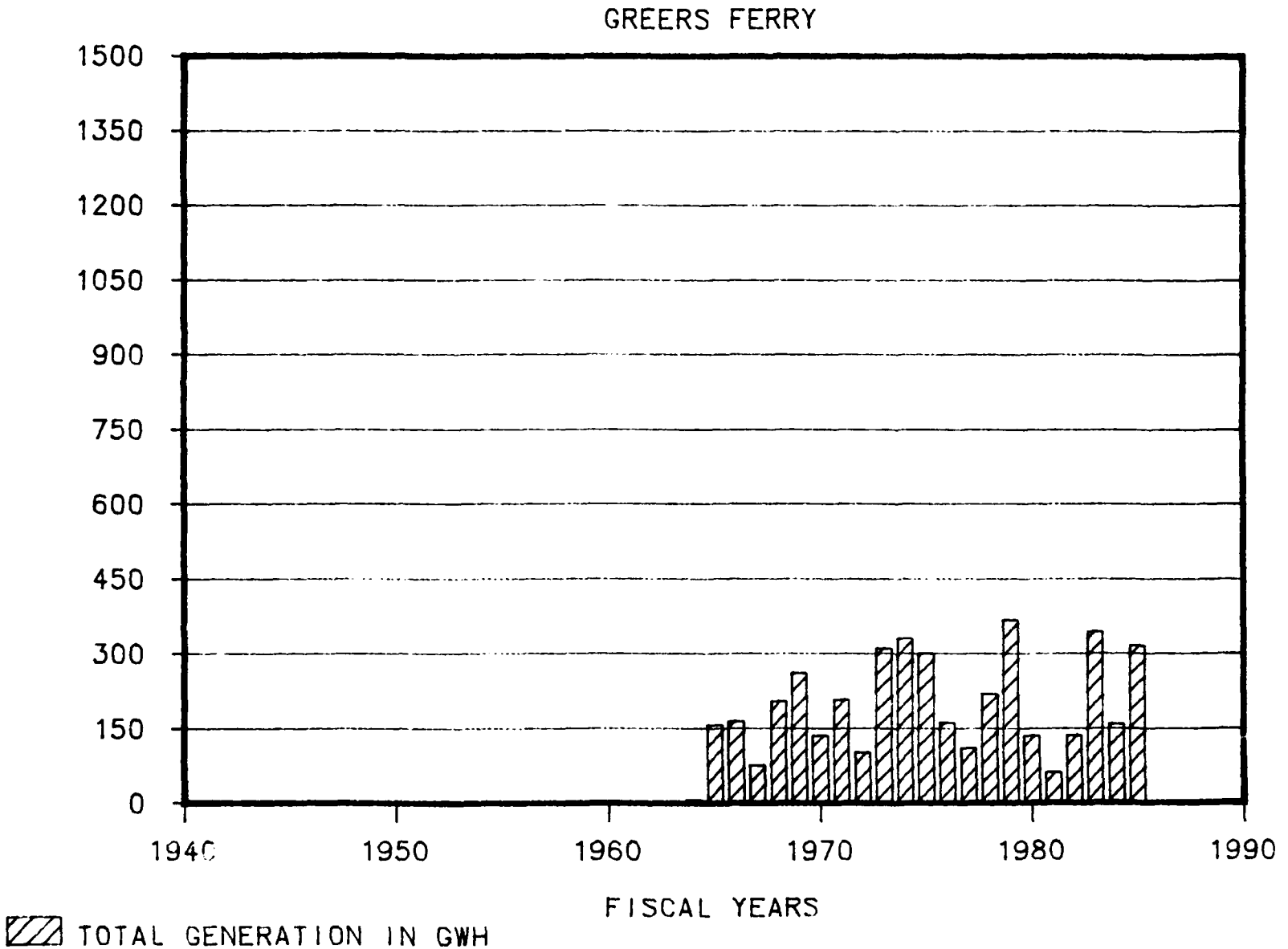
150
0
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 4


GREERS FERRY
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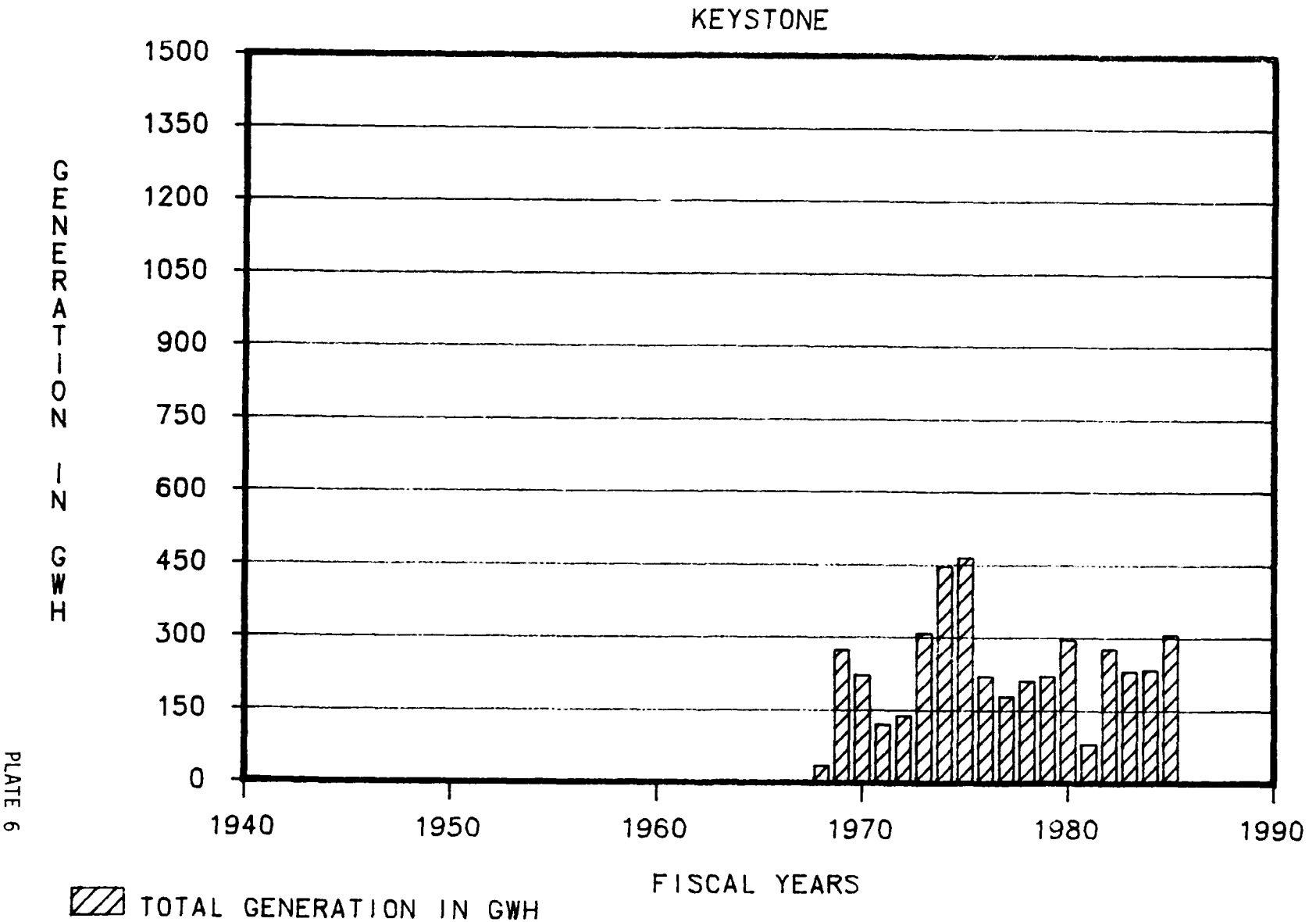
1350
1200
1050
900
750
600
450
300
150
0
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 5


KEYSTONE
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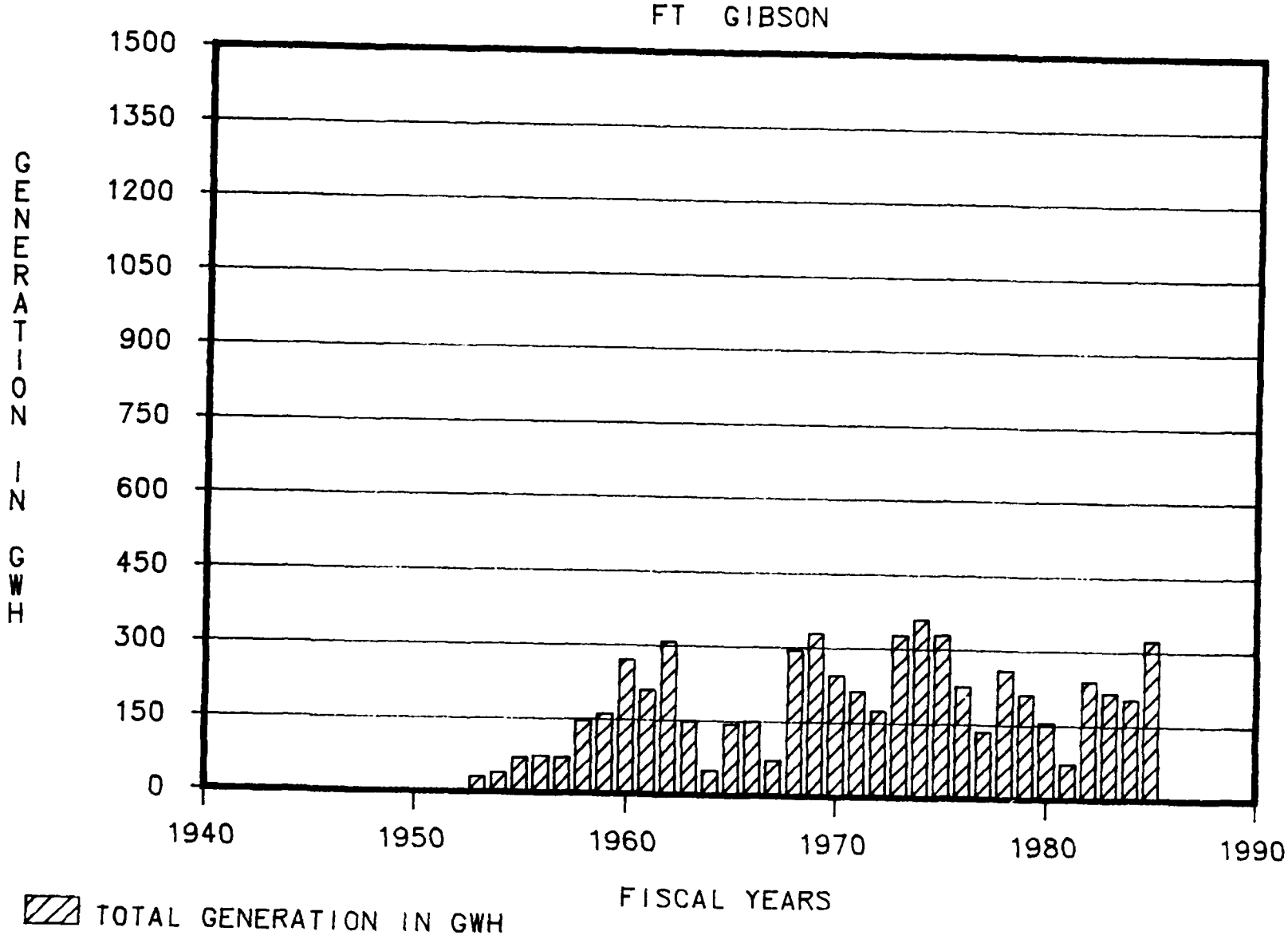
1350
1200
1050
900
750
600
450
300
150
0
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 6


FT GIBSON
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1350
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1050
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300
150
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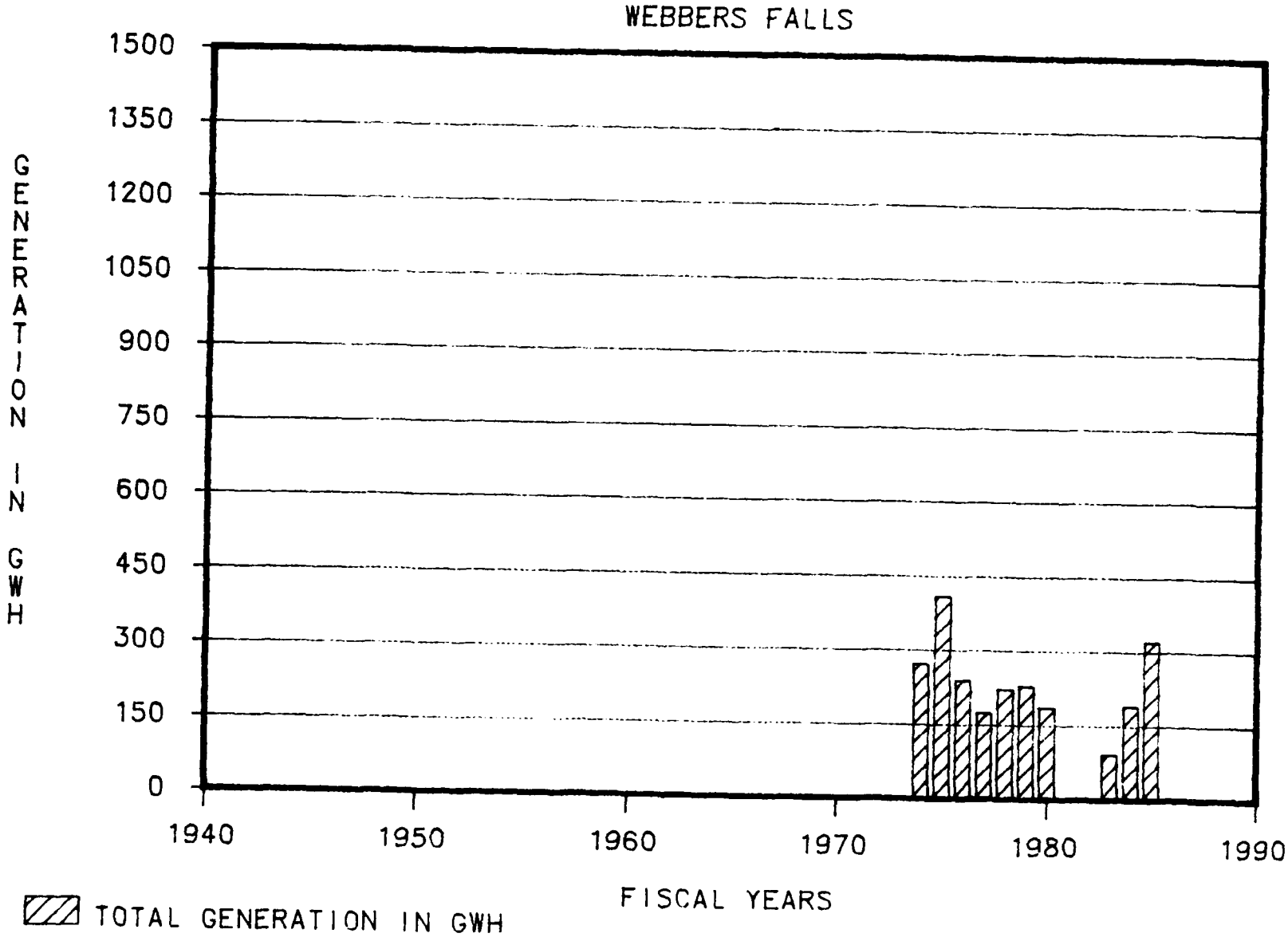
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 7


WEBBERS FALLS
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1200
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600
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300
150
0
GENERATION IN GWH
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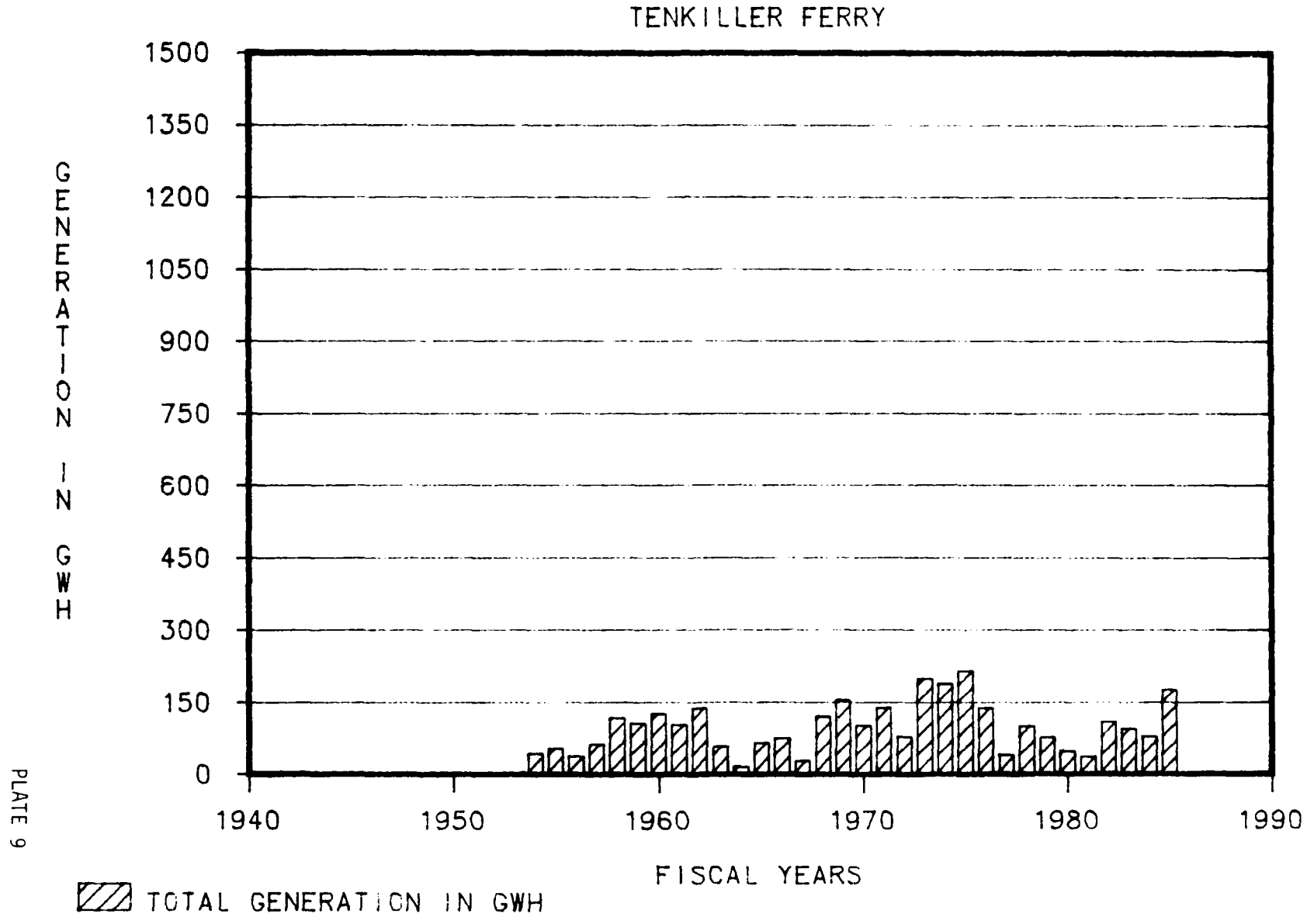
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 8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GENERATION IN GWH
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1350
1200
1050
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750
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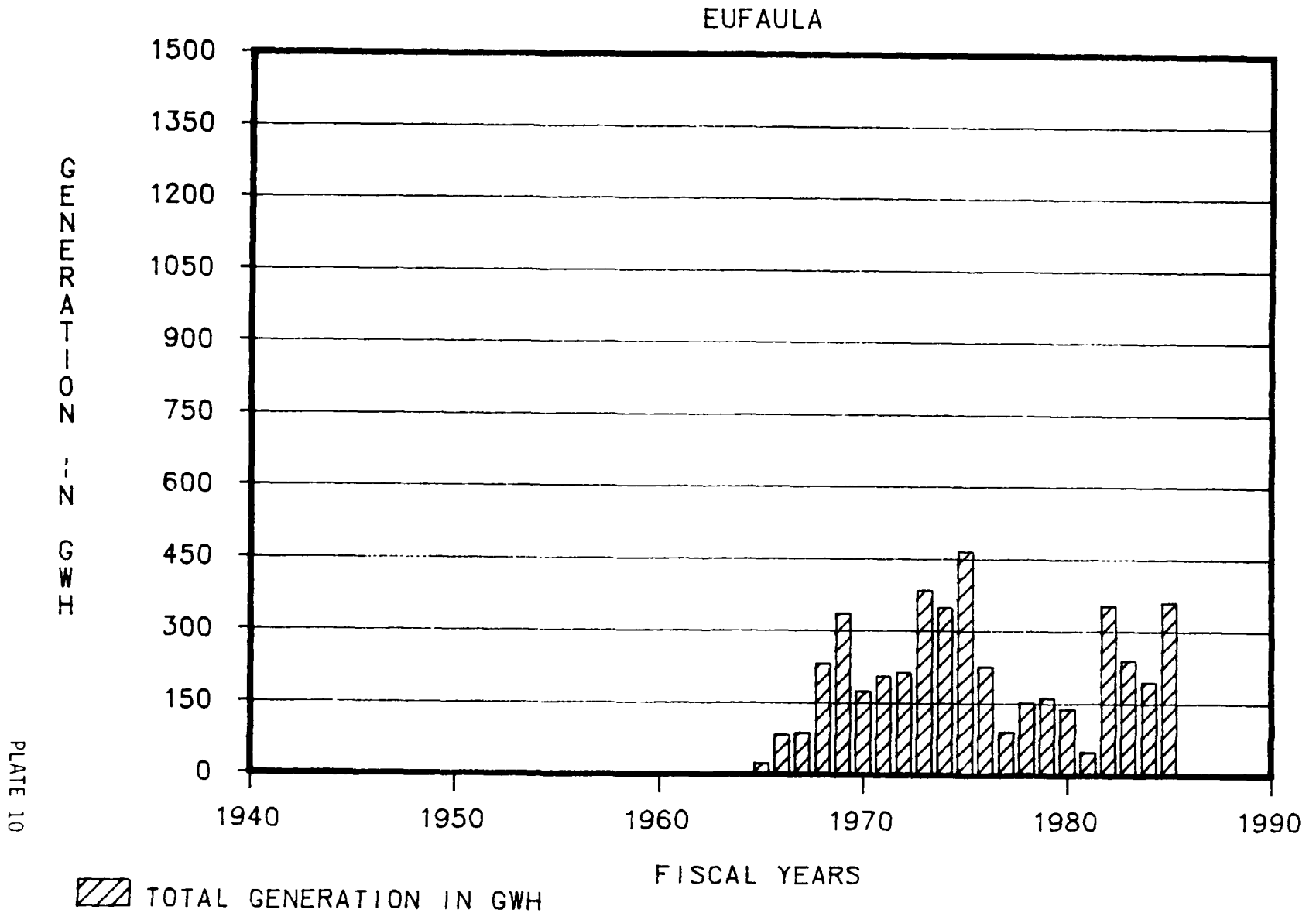
450
300
150
0
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 9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1050
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750
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150
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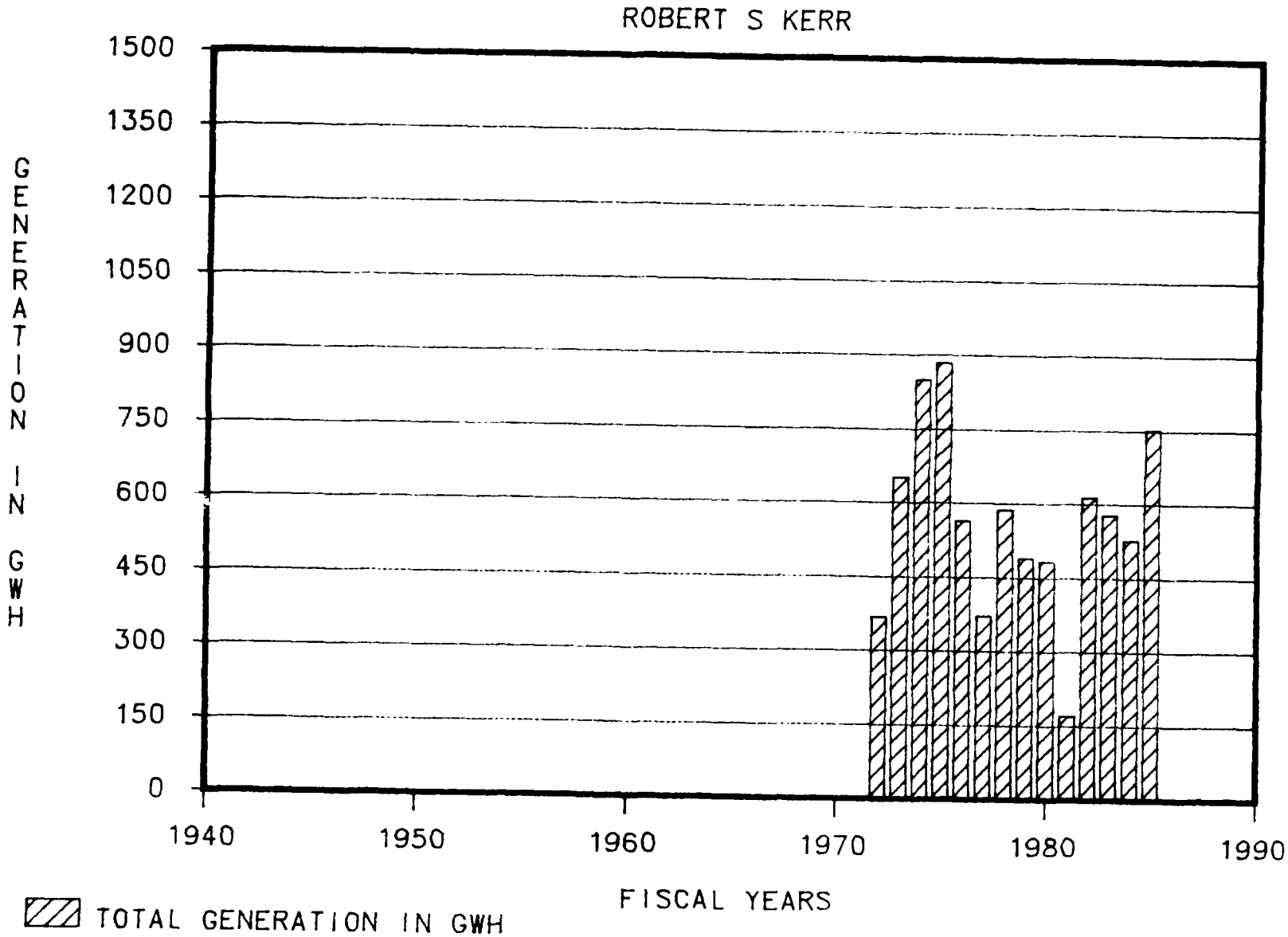
GENERATION - N GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 10


ROBERT S KERR
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1350
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1050
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750
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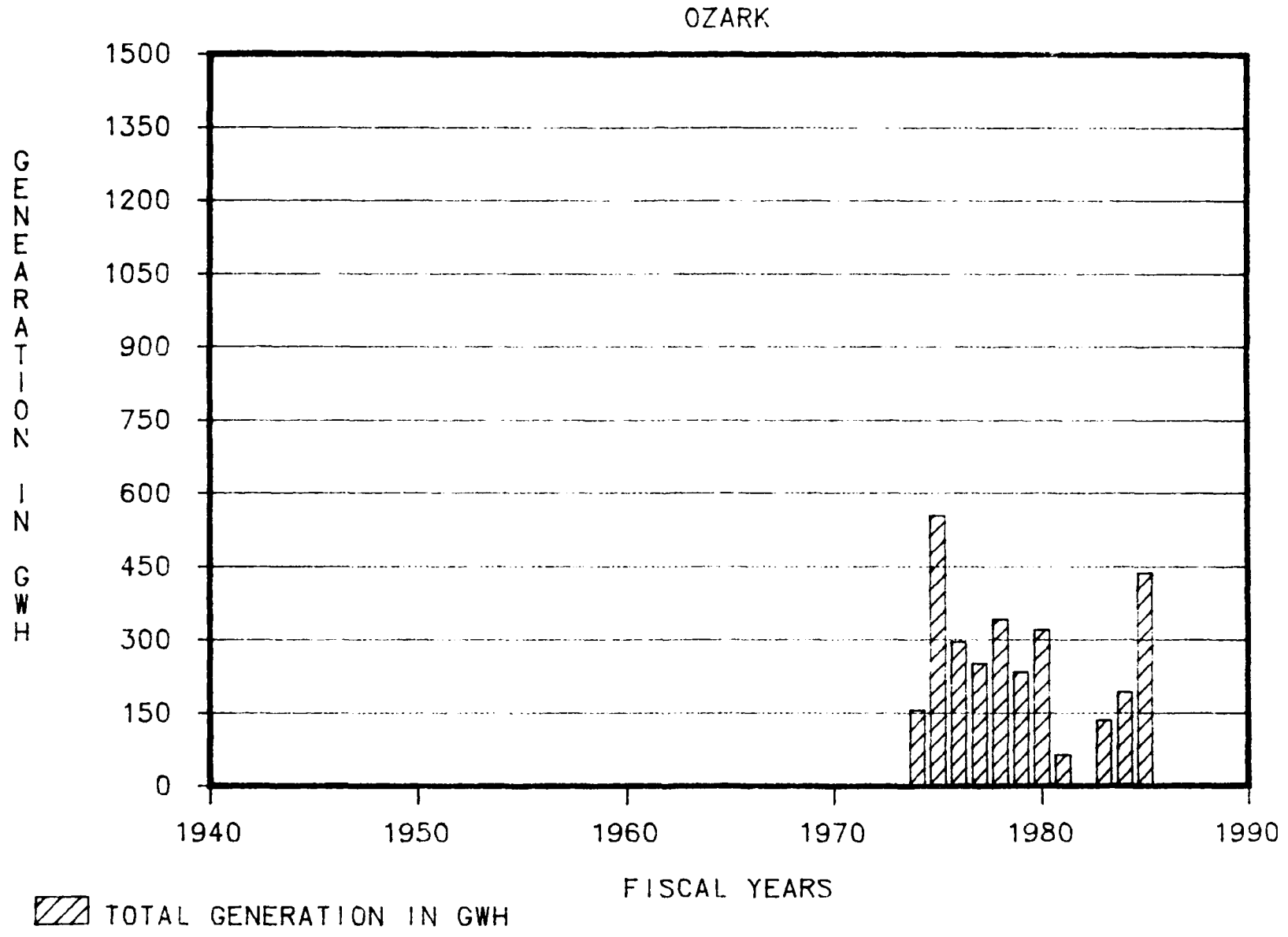
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 11


OZARK
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1050
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GENEARATION IN GWH
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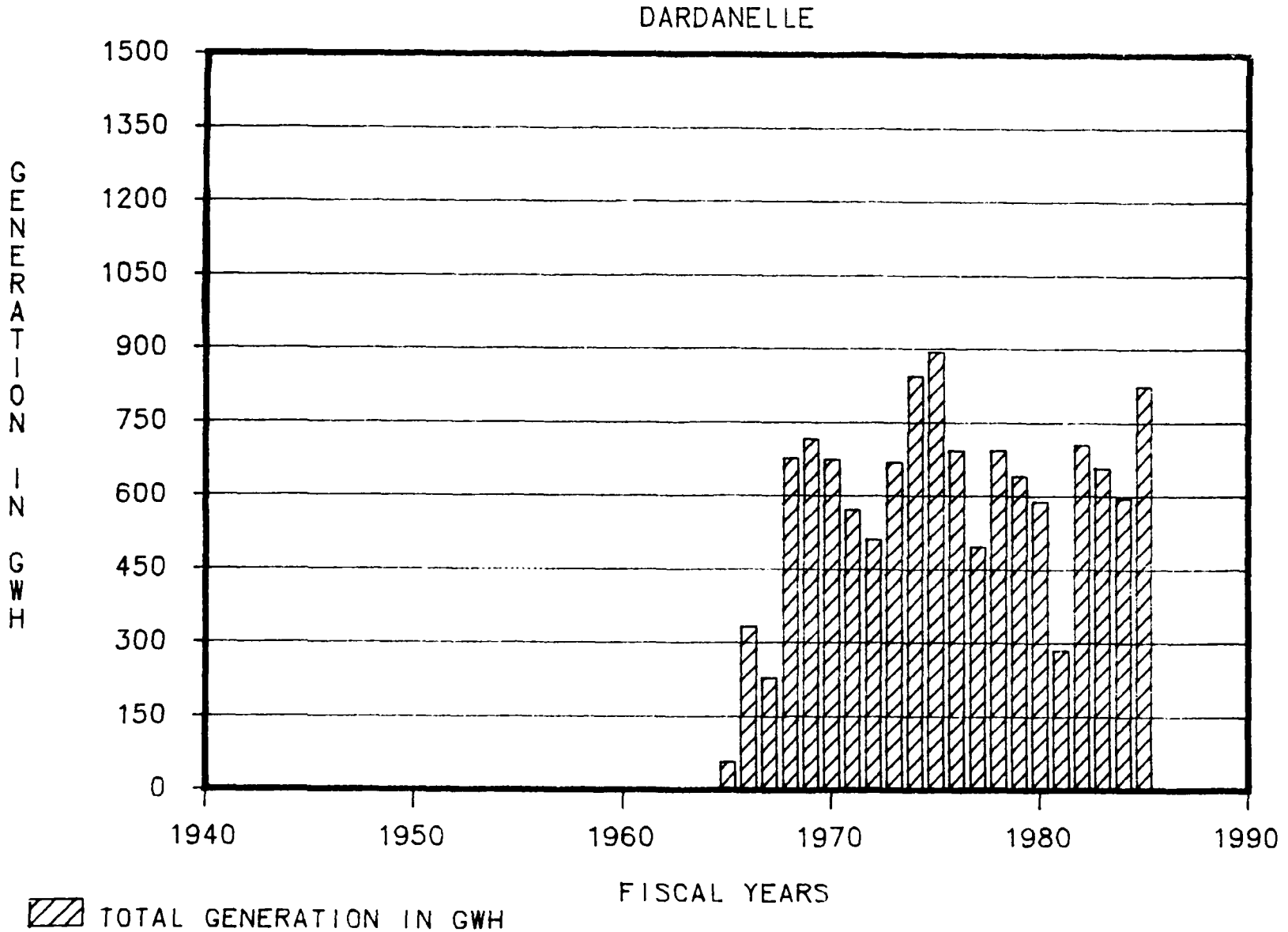
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 12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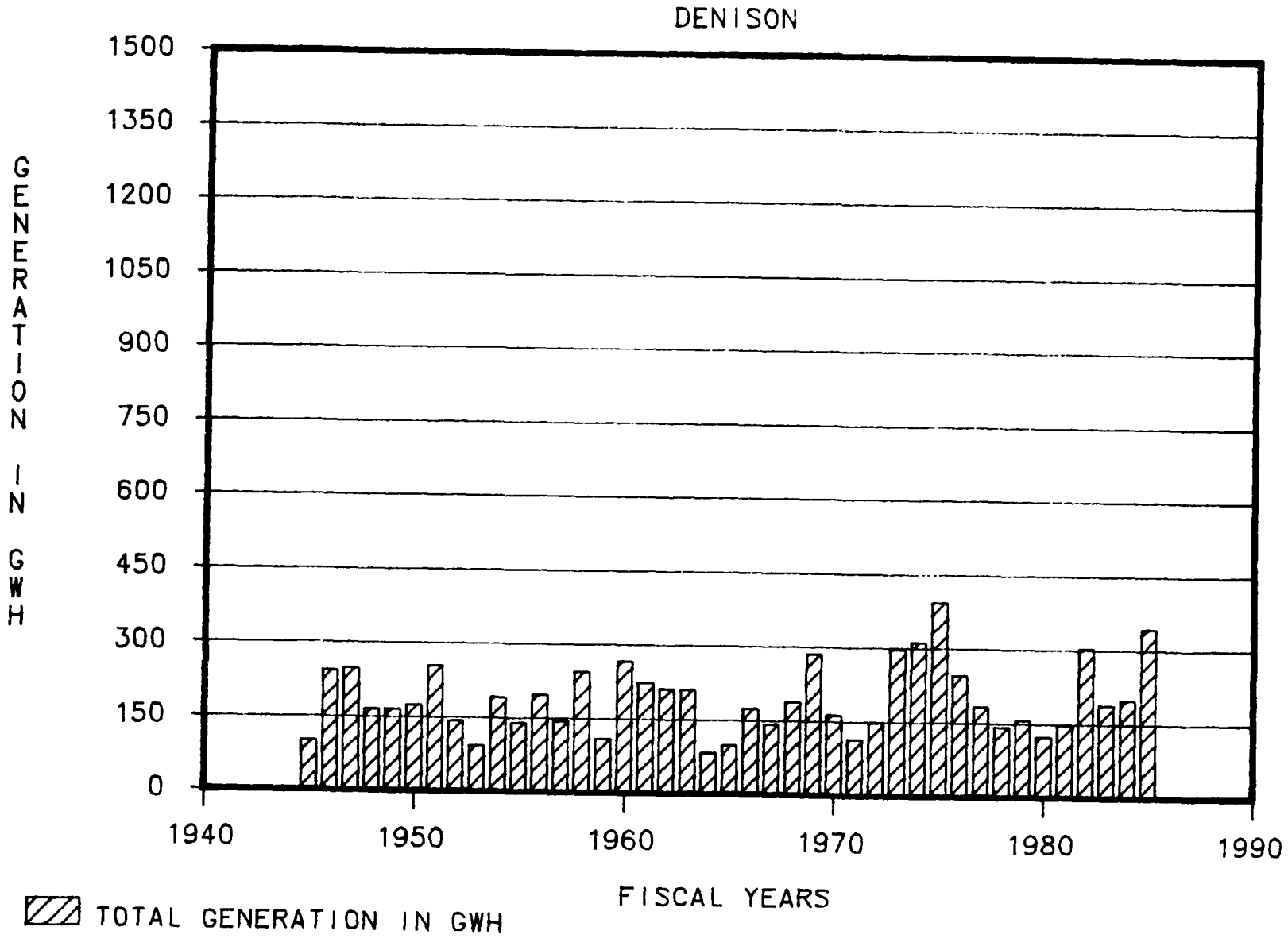
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 13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GENERATION IN GWH
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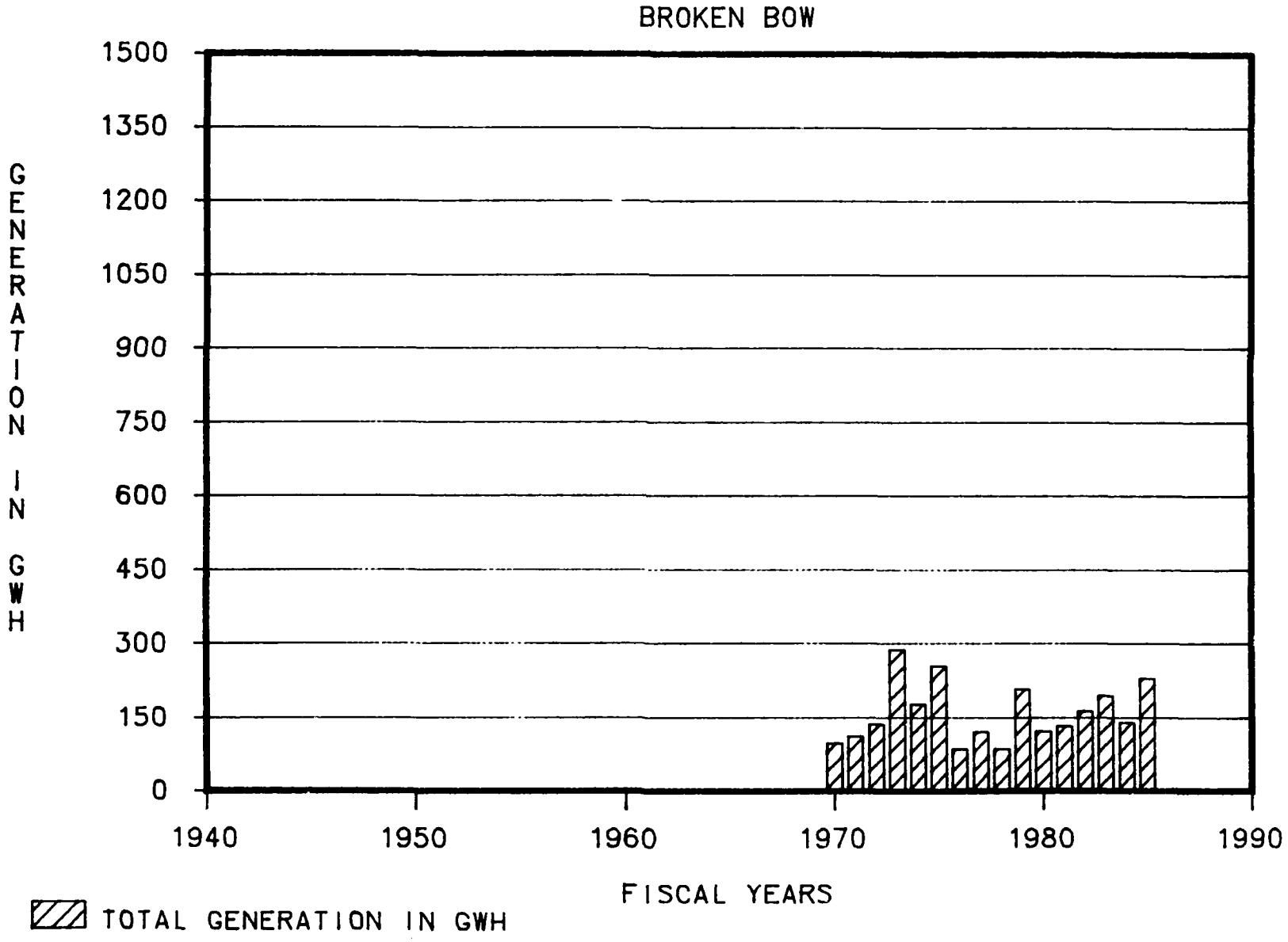
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 14


BROKEN BOW
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GENERATION IN GWH
1940
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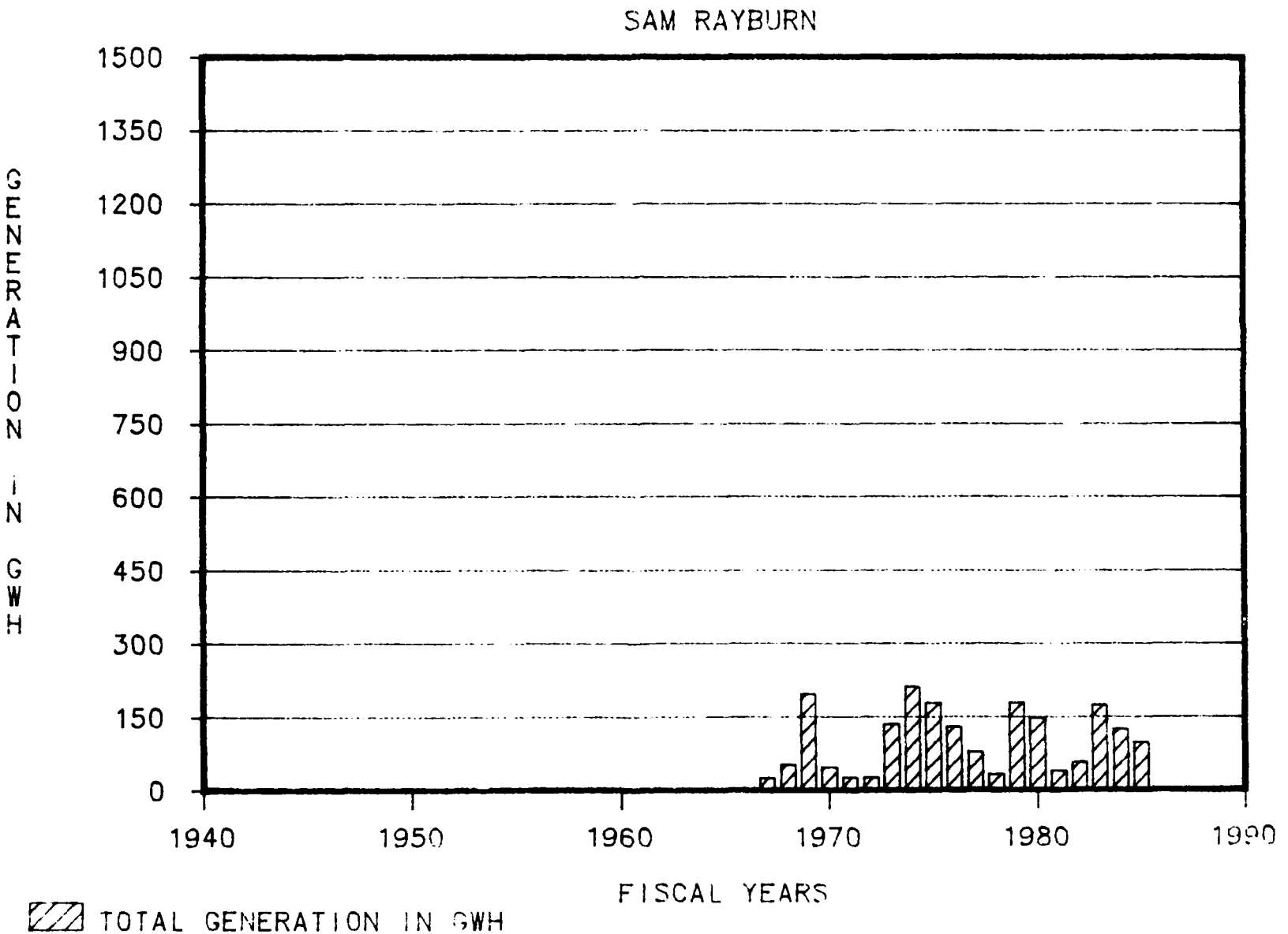
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 15


SAM RAYBURN
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1350
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1050
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750
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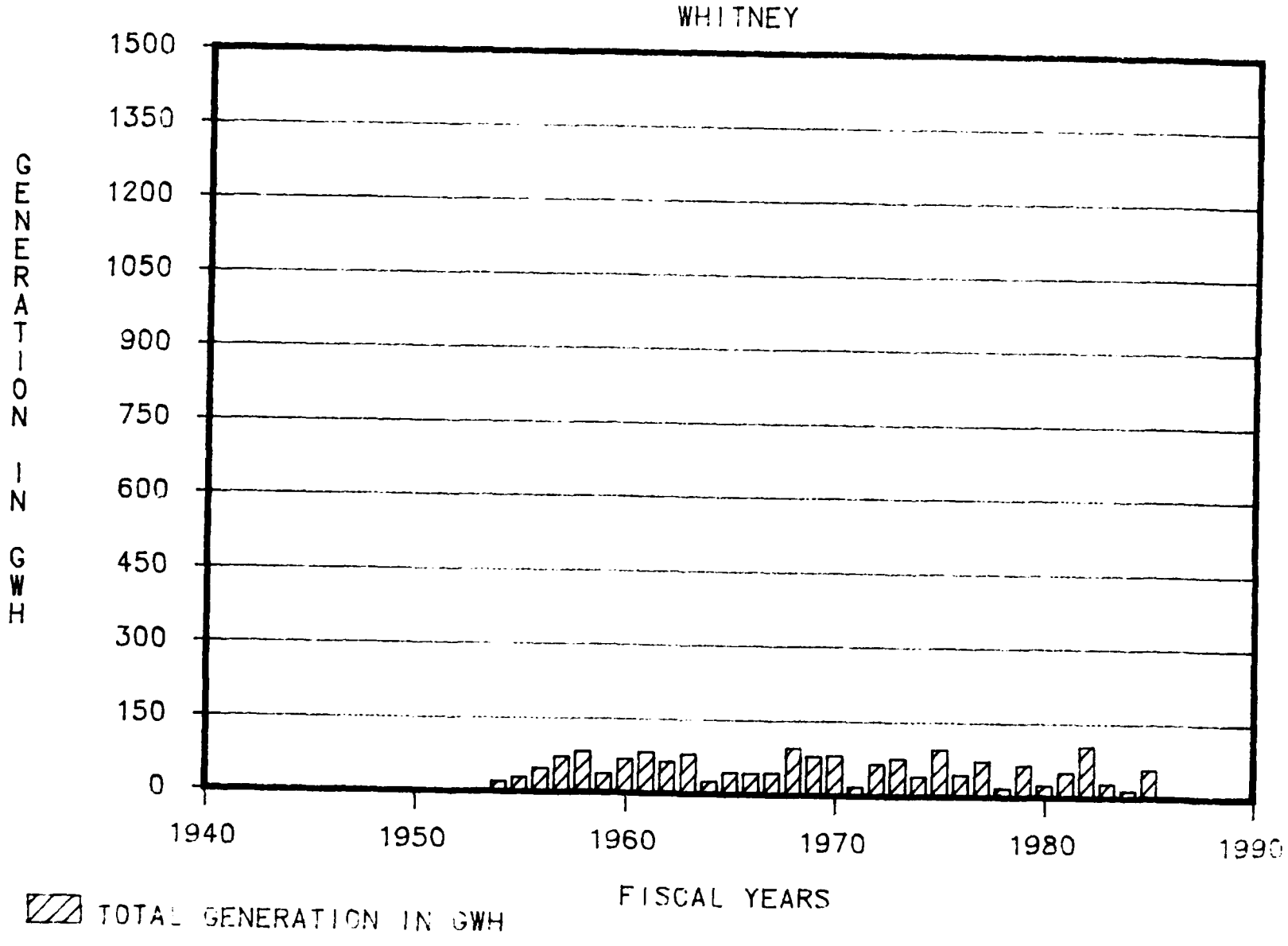
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 16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1350
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1050
900
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600
450
300
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0
GENERATION IN GWH
1940
1950
1960
1970
1980
1990
FISCAL YEARS
TOTAL GENERATION IN GWH

PLATE 17

SECTION VI - DISTRICT WATER CONTROL ACTIVITIES

SECTION VI - DISTRICT WATER CONTROL ACTIVITIES

1. **Project Visitation By Water Management Personnel.**

a. **Albuquerque District.** During FY 85 all Corps projects in the Albuquerque District were visted by reservoir regulation personnel, with the exception of Trinidad and Santa Rosa. The section 7 projects (Platoro, Pueblo and Sumner) were not visited.

b. **Fort Worth District.** Seven of the district's reservoir projects were visited by water management personnel during FY 85. Lewisville and Grapevine Dams were visited in November 1984; Georgetown and Granger Dams were visted in March 1985; Whitney and Aquilla Dams in April 1985; and the Benbrook Dam in August 1985. Water Control Manuals, flood and emergency operations procedures, potential flooding areas, shoreline and downstream erosion, and WCDS data collection and dissimination were discussed with project personnel during these visits.

c. **Galveston District.** On 22 August 1985, Hydrology and Hydraulics personnel visited the Addicks Project Office to review operational procedures with project personnel. The briefing included day-to-day water control duties such as gate operation procedures and a review of the various emergency regulation schedules.

d. **Little Rock District.** During FY 85, Water Management Section personnel visited the Little River project area to discuss project operations and to look at some problem areas which were noted during the year. Incoming water management personnel also witnessed a float study conducted by the Navigation Section at the upstream approach to Lock 7.

(1) The personnel with primary regulation responsibility for the Little River system visited the project in November of FY 85. A tour of the Tri-lakes area in the Little Rock District and the Broken Bow project in the Tulsa District was arranged by the Millwood-Tri Lakes resident engineer. Trouble spots were pointed out and discussed. These included the equipment rehabilitation at Gillham and areas inaccessable due to high water at DeQueen. Also discussed was the safety hazard associated with the low water bridge below Gillham where project releases had washed a vehicle into the river resulting in one fatality. At Millwood the park manager led a tour of recreational sites flooded during high pool conditions and areas immediately downstream of the dam which are flooded at tailwater elevations above 250. Downstream of Millwood a reported area of bank erosion was investigated but access to the area was unavailable.

(2) During the high flows on the Arkansas River in March a hinged pool operation was conducted on Pool 7. Complaints were received from towboat operators about the high outdraft current caused by this hinge at the upstream lock approach. Water management personnel were on hand to observe the float test conducted to investigate this hazard. The hinge was discontinued after several near accidents at the site.

e. **Tulsa District.** Nineteen project sites were visited by Reservoir Control Section personnel this fiscal year. The projects visited and purposes for the visits are listed in the table below.

PROJECT VISITATION DURING FISCAL YEAR 1985

PROJECT	PURPOSE OF VISIT
Arcadia	Morning report orientation
Birch	Scheduled reservoir control visit
Broken Bow	Scheduled reservoir control visit
Chouteau	Scheduled reservoir control visit
Copan	Scheduled reservoir control visit
Elk City	Stilling basin inspection
Eufaula	Scheduled reservoir control visit
Hugo	Scheduled reservoir control visit
Newt Graham	Scheduled reservoir control visit
Pat Mayse	Site familiarization
Pine Creek	Scheduled reservoir control visit
Robert S. Kerr	Scheduled reservoir control visit
Skiatook	Scheduled reservoir control visit
Tenkiller	Scheduled reservoir control visit
Texoma	Dam safety program
Waurika	Field investigation
W. D. Mayo	Scheduled reservoir control visit
Webbers Falls	Scheduled reservoir control visit
Wister	Examine spillway operations

2. **Special Reservoir Operations.**

a. **Albuquerque District.** Fiscal Year 1985 was one of the busiest years for reservoir regulation activities in the Albuquerque District. Three projects; Abiquiu, Cochiti and Santa Rosa, reached record pool elevations during the year.

In the Rio Grande Basin the snowmelt runoff exceeded 250 percent of normal in many areas. For the first time in the history of the District the flood control projects of the upper basin (Abiquiu, Cochiti & Jemez Canyon) were used to provide flood protection for the area below Elephant Butte Dam. A 100,000 acre-foot reserve was maintained in Elephant Butte Reservoir to provide space for a 100-year flood event. The upper basin projects were operated in this manner for the period 16 May through 23 July.

Abiquiu Reservoir stored snowmelt runoff beginning 10 April and reached a maximum pool elevation of 6256.23 (382,780 acre-feet) on 12 June. A total of 120,356 acre-feet of flood water was carried over in storage beginning 22 July. The evacuation of this carryover storage began 1 November 1985 and will be completed by 31 March 1986.

Cochiti Lake began storing spring runoff on 10 April and attained a maximum pool elevation of 5413.48 (282,763 acre-feet) on 29 June 1985. There was 130,930 acre-feet of water carried over in storage beginning 23 July. The evacuation of this carryover water will begin approximately 20 November 1985 and completed by 31 March 1986.

On five different occasions during the year, Cochiti releases were decreased for reasons that varied from channel maintenance to aerial surveys.

In the Pecos River Basin, Santa Rosa Lake attained a record pool elevation of 4746.67 on 1 July. This was the first time the project had reached its maximum conservation storage.

In the Arkansas River Basin in Colorado most reservoir levels remained well above normal. Pueblo Reservoir, a Section 7 project, maintained a full conservation pool through much of the year with numerous short instances where storage was required in the flood pool. John Martin Reservoir releases were cut for the period 16-18 June to search for a drowning victim.

A Dam Failure Exercise was conducted on 18 September 1985. The exercise included Abiquiu, Cochiti and John Martin project personnel as well as the Emergency Operations Center. The primary purpose of the exercise was to evaluate the implementation of the Dam Failure/Food Emergency Plans for each site. Reservoir Regulation personnel were key participants in this exercise. The exercise was highly successful, and pointed to the need for similar exercises in the future.

b. **Fort Worth District.** Flood control operations were very frequent for the winter and spring months during FY 85. Twenty flood control projects, out of the District's total of twenty-two, used part of their flood control storage during the year. There were twenty-seven requests for deviation from the approved project plans of regulation from the District to the Division. The City of San Angelo through the Upper Colorado River Authority requested and received State of Texas approval for use of up to 8,000 acre-feet of water stored in the sediment reserve storage space of the lake. The low lake level condition placed the evelation of the lake below the low flow conduit invert elevation; therefore, outflow releases were made using the flood gates.

c. **Galveston District.** The gates at Addicks and Barker were closed on two occasions during the year, one day during April to allow Harris County Flood Control District to recover one of their marsh buggies from Buffalo Bayou below the reservoir and 9 days during September to allow the Harris County Flood Control District to remove log jams downstream of the reservoirs.

d. **Little Rock District.** FY 85 was a near record water year in the Little Rock District. The White River system handled the largest volume of flood water experienced since construction. Flooding activity began in October and continued through the spring. December rains resulted in record January pool levels. The Arkansas River Basin passed the most flood water since 1973. Both of its tributary reservoirs utilized their spillways. High flows on the Arkansas begin in October and continued sporatically through June hampering traffic. Siltation due to these high flows required six of the pools to be held above their upper navigation limits to prevent loss of navigation depth. All reservoirs in the District were utilized in the flood control activities.

(1) Special operations or activities related to water control projects are summarized as follows:

(a) **Little River System.** On 31 October 1984 at about 11 A.M. project personnel at Gillham Dam reported severe vibration of the gate tower. Both conduit gates were open 5.0 ft. and the low flow butterfly value was opened 45 degrees giving a total release of 2850 cfs. The pool elevation was 548.3 ft. Upon notification of the problem the project regulator ordered the dam tender to begin to close conduit gate number 1 in 0.5 ft. increments to a setting at which no vibration was detected. At a setting of 4.0 ft. only a small amount of vibration was noted and it stopped at a setting of 3.0 ft. During the following week attempts by investigatiors from LRD, SWD, and WES were made to duplicate the vibration using various combinations of gate openings. Tests were only partially successful since only small vibrations were produced. However, the tests indicated the worst vibration occurred with both conduit gates open 5.0 ft. and the pool elevation at 549.0 ft. It was also determined that the low flow valve, while not the source of the vibration, appeared to increase its magnitude when open. Therefore, unitl the problem is identified and resolved, gate number 1 has been restricted to an opening of 3.0 ft. and the low flow valve is being used only during the temperature transition phase of gate operations for flood releases. Vibration sensors were installed in the outlet tower in July 1985. Tests to locate the source of the vibration will be conducted during FY 86.

Repair work on the stilling basin at Gillham Dam was completed in December 1984. A drawdown to El. 255.0 at Millwood to facilitte fishery management activities by the Arkansas Game and Fish Commission and to repair spillway gate cables was begun in early September 1985, and will continue until March 1986. The Little River Lakes experienced 11-15 rises during FY 85.

(b) **Arkansas River System.** FY 1985 began with the Arkansas River System at normal pool limits, the navigation channel in good shape, and with Lakes Nimrod and Blue Moutain at conservation pool.

Due to local runoff, Lakes Nimrod and Blue Mountain rose into their flood pools on 7 October 1984. As a result of subsequent rains and accumulated runoff, Blue Mountain Lake was filled to 100 percent on 2 November 1984 and 103 percent on 28 November 1984 with flow over the spillway for a total of 7 days, and the bridge on Alsley Creek Road

above Blue Mountain was flooded for a total of 62 days. Nimrod Lake was filled to 112 percent on 28 October 1984 with flow over the spillway for a total of 11 days. Blue Mountain Lake returned to seasonal pool on 18 may 85, and Nimrod Lake returned to seasonal pool on 22 May 85.

On the Akransas River, periods of flow greater than 100,000 cfs at Little Rock occurred during the months of October 1984 through June 1985. The flows at Little Rock exceeded 70,000 cfs for 167 days, exceeded 100,000 cfs for 110 days and exceeded 150,000 cfs for 54 days.

By the end of January, the high flows had created shoals in Pools 2, 7, Dardanelle, and Ozark that required dredging. Navigation depths were maintained during the February recession by raising the headwater to above normal limits in those pools. Subsequent high flows that started in late February and continued into May further created shoals in pools, 2, 4, 7, 9, Dardanelle, and Ozark, and a revetment failure occurred in pool 4. Navigation was maintained by raising the pool limit to above normal for those pools as well as restricting hydropower peaking operations at Kerr, Ozark, and Dardanelle. The total time that the pools were held above normal limits is listed as follows: Pool 2 -86 days, Pool 4 - 139 days, Pool 7 - 85 days, Pool 9 - 95 days, Dardanelle -95 days, and Ozark - 81 days. All dredging was finished and the last pool was returned to normal limit by 15 October 1985.

A hinged pool operation was initiated 18 January 1985 to improve the channel at miles 95 through 97. The operation was curtailed 20 January 1985 to preclude possible scalping of flows that might contribute to identified depth problems downstream. Further plans were made to hinge Pools 5, 7, 9, and 13 on the recession of the rise of 23 February 1985. Extended high flows above 150,000 cfs for the entire month of March held the headwater at high levels except at L&D No. 7. During this period, an outdraft problem at Lock No. 7 was studied by conducting float tests on 9 and 10 April 1985. It was concluded that not more then a 3-foot hinge should be used at flows greater than 100,000 cfs at L&D No. 7 until the training structures upstream of the lock are modified and retested. The hinge pool plans for Pools 5, 7, 9 and 13 were curtailed on 12 April 85 whereby the pools were refilled to a scheduled whose purpose was to modify the recession flows to maintain depth at the downstream approach at locks 3 and 4 while material was being removed by clamming.

A 3-foot hinge was initiated in Pool 9 on 6 May 85 and was achieved on 10 May 1985. We began raising the pool on 16 May to maintain 9-foot depths, and the pool was up to navigation pool by 19 May 1985.

A 3-foot hinge was attempted in Pool 7 on 8 June 1985. A 2.5-foot hinge was held from 8 June 1985 through 21 June 1985 when a loss of depth at mile 137 was reported at a flow of 80,000 cfs. The pool was raised as flows receded to maintain 9-foot depths.

The entrance channel experienced higher than normal slope as a result of extended flood pool evacuation flows in the White River in combination with low Mississippi River stages. Navigation was hampered by the high current, but depths were maintained by dredging.

Overall, navigation interests had to contend with extended periods of high flows and several groundings occurred at marginal depths, but the system was open to navigaiton for the entire year.

The harvest of low-lying crops was hampered in the fall of 1984 and the planting of low-lying crops was impeded until July 1985.

(c) **White River System.** Water management activities for the White River Basin projects in 1985 were characterized by repeated deviations from the basic management plan. The deviations attempted to optimize agricultural flood control benefits in the face of the largest volume of rainfall and floodwater experienced since the construction of the White River reservoirs. Fifty inches of rain fell on the basin between October and June. This resulted in 33 million acre-feet of runoff, of which 14 million acre-feet were controlled by the reservoirs.

In late October 1984 the White River regulation stages were lowered to 12 feet at Newport and 14 feet at Georgetown in an attempt to allow farmers to harvest crops below the normal regulation stage which is held at 14 feet at Newport through November and 21 feet through December. Similarly, on the Black River, a 5-foot Poplar Bluff stage was maintained through November. Because uncontrolled runoff remained high, thousands of acres could not be harvested despite regulation efforts. The high runoff of late fall and early winter caused the Beaver reservoir to reach the top of its flood control pool on 21 December. A surcharge operation was initiated. On 23 December, excessive seepage was discovered below Beaver's (Dike No. 1) embankment necessitating the immediate lowering of the water surface to elevation 1125.0. The pool will not purposely be held above elevation 1125.0 for a sustained period of time. Thus, its long term water holding capacity remains reduced by 51 percent pending resoluiton of this problem.

It was apparent in early January 1985 that no further benefit could be derived from the reduced releases. A deviation was obtained to raise the target regulation stages to 24 feet at Newport and 22.5 feet at Georgetown, thereby releasing the record volume of flood storage in anticipation of higher spring runoff. By the middle of February only 11 percent of the basin's flood storage was in use.

Late February through eary May saw increased runoff so that despite spillway releases to maintain the high reguation stages the pools rose to near record levels. On the first of May the standard regulation stages were reinstituted. By this time the plight of the White River agricultural interest had prompted an unusually high degree of congressional involvement in the water management process. By 13 May the increased congressional pressure prompted a deviation to lower the regulation stage to 12 feet at Newport and 14 feet at Georgetown. The deviation extends through December 1985 barring a significant threat of exhausting the flood storage capacity of the reservoirs. This action resulted in increasing reservoir levels and slow evacuation. Bull Shoals crested in June, as did Norfolk and Clearwater. By the middle of September the Bull Shoals flood pool was evacuated and by mid-October 1985 all remaining flood water had been released.

Through most of the summer, releases from Clearwater Reservoir were reduced on weekends to provide safer flows for the downstream canoeing. Releases were reduced temporarily on both the Black and White Rivers to drain bottomland hardwood timber stands in game management and refuge areas.

A special operation was instituted for the third year at Greers Ferry to lower the water surface below the spillway crest to facilitate painting of the radial gates. The required elevation was reached at the end of September.

(2) Studies, reports, and investigations related to water control projects are summarized as follows:

The report on Table Rock dissolved Oxygen Study was distributed in July 1985. The study evaluated the effects of hypolimnetic discharges from Table Rock Dam into the downstream Lake Taneycomo trout fishery. The study recommended selective withdrawal stuctures on the penstock intakes to be the most economically efficient alternative. The report, which recommends mathematical and physical model studies of selective withdrawal structures, has been submitted for approval as a major rehabilitation project.

A restudy of the White River Lakes was completed in 1985. The study conclusions indicate there is no justification for changing the current storage allocations within the system of White River lakes. It is recommended a regulation study be conducted to determine if regulation criteria could be changed enough to solve some of the problems encountered by both in-lake and downstream interests. An ongoing regulation study will be the basis of minor changes in the operation of the lakes.

A feasibility report on Norfork Units 3 and 4 is scheduled for completion in FY 86. Six alternatives have been considered during the study. The alternatives include the addition of pumpback and additional units.

The White River Basin Comprehensive Report, completed in June 1968, presented a comprehensive plan of development to help meet the short and long-term water and related land resouces needs of the White River Basin. The comprehensive plan includes an early action category of projects and programs referred to as the 10-15 year plan. An ongoing study will verify the feasibility of projects identified in the 10-15 year plan, including levees along the Black and White Rivers and four reservoirs. The Corps reviewed the plan for the levee to protect the city of Jacksonport and construction of that project is underway. Work on the remaining levees and the lakes identified is continuing.

The Arkansas River Basin Study is a general investigation study which is currently in the reconnaissance phase. It will investigate water supply, flood control, navigation, and other related water resource problems in the basin. The navigation portion of the study will address the possible need for additional system storage to reduce the magnitude and duration of flows which hamper navigation.

The LRD is formulating a Plan of Action Report on Additional Land Acquisition along the McClellan-Kerr Arkansas River Navigaiton System in LRD. This Plan of Action will detail the study scope recommended and the time and cost required and will be submitted to SWD recommending approval and funding. The study goals are to make the necessary land acquisitions such that damage claims are reduced and project operations are less encumbered.

Non-Federal Hydropower Reviews. The Little Rock District is responsible for reviewing preliminary permits and applicaitons filed with the Federal Energy Regulatory Commission (FERC) for the development of hydroelectric power at Corps projects or at non-Corps projects within LRD boundaries to ascertain potential impact on Corps responsibilities. Seven FERC licenses have been issued at Corps projects: Locks and Dams 13, 9, Murray 7,3, and Dam 2, and Millwood and Gillham Lake projects. Preliminary FERC permits have been issued for locks and Dams 4, 5, and 6, and Toad Suck Ferry Lock

and Dam (8), and the DeQueen, Dierks, and Nimrod Lake projects. License applications are pending for Locks and Dams 4, 5, and 6. Applications for preliminary permits are pending for non-Federal hydropower development utilizing the conduits from the dams to the fish hatcheries at the Greers Ferry, Norfolk (Arkansas), and Table Rock (Missours) lake projects. The District has also reviewed applicaitons for hydropower at undeveloped projects at the three dams on the the White River near Batesville, Dam 3 on the Spring River, and Lee Creek near Fort Smith, Arkansas.

(3) Other significant items relating to water managment activities are as follows:

Water Control Data System (WCDS). Water Management personnel are utilizing applicaitons software developed by LRD to manually enter all daily reservoir data, perform water budget computations, and prepare daily reports and forecasts. The Harris 1000 presently communicates with the NESS (National Environmental Satellite Service) downlink to receive DCP (Data Collection Platform) data. The Fort Worth downlink is used as an emergency backup to get a hard-copy of the raw data when communications to NESS fail. DCP data are currently being stored in DSS (Data Storage System), a data base developed by HEC. Applications programs from HEC allow users to view, edit, and plot collected data.

DCP Status

LRD has a total of 88 operating DCP's. Plans are to activate the remaining four DCP's in early FY 86. LRD is currently monitering nine DCP's outside the District.

Acoustic Velocity Meter. The acoustic velocity meter (AVM) for the automated flow measuring station in the Arkansas River just downstream of Dardanelle Dam has been calibrated and is ready for use via telephone line. A problem sitll exists in transfer of the data from the AVM to the DCP.

e. **Tulsa District:**

a. Arkansas River Basin. Flows in the Arkansas River Basin were usually high during fiscal year 1985. The Van Buren flows were about 200% of normal. Approximately 25% of the annual volume passed Van Buren during the month of March when the flow averaged about 150,000 cfs. Flows exceeded 100,000 cfs for about 90 days during this FY. A continuous TAPER operation was in effect from mid-December to mid-July with rises above 100,000 cfs in every month from December to June. Numerous deviations were approved to provide prolonged flows for navigation purposes. One noteworthy deviation occurred in December when flows at Van Buren were significantly reduced to aid in the recovery of two victims of an airplane crash in pool 13.

Record high pools were reached at Birch, Copan, Skiatook, Big Hill, and El Dorado Lakes. The second highest pools of record were reached at Norman and Wister. At Norman Reservoir, the Alameda Street Bridge crossing the Little River arm of the Lake was closed by high water for over three months. Residents living east of the Lake were required to detour 15 miles in going to and from the city of Norman. At Wister Lake, the pool elevation exceeded the uncontrolled spillway crest for 13 days in October and November causing minor damage to the spillway exit channel. A loose barge was beached on the overflow embankment at Newt Graham lock and dam causing considerable damage

to the overflow section. The necessary repairs have since been made. The cofferdam at Arcadia was overtopped in April requiring repairs.

Releases were made from Canton Lake during August for Oklahoma City water supply. Special releases were made from Great Salt Plains Lake in September to alleviate a fish-kill problem in the stilling basin. Removal of the re-regulation dam below Keystone was started in August.

Annual raft races for various organizaitons required releases from Council Grove, John Redmond, Fort Gibson, Keystone, Robert S. Kerr and W. D. Mayo Dams.

b. **Red River Basin.** Most projects in the Red River Basin ended the fiscal year with about the same pool elevation they had at the beginning of the fiscal year. Flows in the western half of the basin were generally below normal with the exception of Mountain Park (185% of normal) and Waurika (400% of normal). From Lake Texoma eastward, the flows were about 200% of normal. Over 50% of the annual inflow volume in the Kiamichi and Little River Basins occurred in October through December. This resulted in maximum pools of record at Sardis, Pine Creek, and Broken Bow Lakes. Due to the high pool, and one of the two generators at Broken Bow Lake being out of service to be rewound, flood releases were made through Broken Bow's spillway for the first time since impoundment. Spillway releases were made from 29 October through 5 December. Some damage to Beavers Bend State Park occurred due to these releases with one roadway being overtopped and washed way. The damage has since been repaired.

Minimum pool elevations of record were recorded at Altus and Foss Reservoirs. As the result of a fish kill below Waurika Dam in April, the shut down procedure following flood releases was modified. Also, a continuous release of 4 cfs was made during the summer months to provide oxygen in the stilling basin for the fish. This procedure will be used again in 1986 in an attempt to find a permanent solution to the problem.

3. **Water Quality Program and Activities**

a. **Albuquerque District:**

(1) The goals of the District water quality data collection program are to provide an accurate picture of lake conditions as to pH, turbidity, temperatue, and dissolved oxygen. Trends are monitored to show improvement or degradation of water quality and the data used to identify public health, fish and wildlife problems.

(2) Readings are made on a monthly basis for the following parameters; surface pH, secchi disk, and dissolved oxygen and temperature at surface and one-meter increments to the bottom. This data is available in the District Operations Office. The following is a listing of sampling locations for each project:

WATER QUALITY SAMPLING LOCATIONS

PROJECT	LOCATIONS	NUMBER
Abiquiu	Chama inflow, Canones inflow, reservoir near dam, release	4
Cochiti	Bland canyon, reservoir near dam, release	3
Conchas	Conchas and Canadian inflow, reservoir near dam, irrigation headworks	4
John Martin	Arkansas inflow, reservoir near boat ramp, reservoir near dam, reservoir near Ft. Lyon Hospital, two Lake Hasty locations, release	7
Trinidad	Purgatoire inflow, reservoir near dam, reservoir near Carpios ridge	4
Jemez Canyon	Inflow, reservoir near dam	2
Santa Rosa	Pecos inflow, reservoir near dam, reservoir near asphalt pit, release	4

(3) Biological samples are tested monthly at all projects. District personell are trained in the use of a gas chromatograph to test for dissolved nitrogen. Tests at Santa Rosa are planned for hardness and sulfate to monitor effects of gypsum deposits in the reservoir.

b. **Fort Worth District:**

(1) For Fiscal year 1985, water quality report for O.C. Fisher Lake was completed and submitted to the Division Office for approval. Two other reports, scheduled for submission in Fiscal 1985, were Belton and Waco Lakes. A draft report for these two projects were completed during the year but not submittd as scheduled. Of the twenty-two projects in the Fort Worth District, water quality reports on eleven projects were completed to date. No major water quality problems were found in any of these projects.

(2) Water quality monitoring in the Fort Worth District is continuing at the same level with respect to 1984 monitoring activities.

(3) Heat Budget Analysis study of Cooper Lake has been completed and is part of the Hydrology Supplement.

(4) In response to a request from the U.S. Fish and Wildlife Service, a heat budget analysis study of Canyon Lake was completed. The purpose of the study was to determine if Canyon Lake, with the existing single level outlet works, was capable of providing release temperatures that would satisfy the temperature objective of 70°F or less at all times throughout the year for downstream cold water fishery. The study indicated that the existing single level outlet works was capable of meeting downstream temperature requirements, but for only normal and dry years. For extremely wet years, a selective withdrawal temperature release system could be controlled by withdrawing water from

upper level ports during the months of January through May. The temperatures in the lake are less than 70°F from surface to bottom during this period. Therefore, the cold water in the hypolimnetic region may be held for release through low level ports during the summer months.

c. **Galveston District.** There were no water quality activities during FY 1985. However, a draft report for the three year quality program to show the effects of the length of impoundment on quality for Addicks and Barker Reservoirs has been received by the U.S. Geological Survey and should be available during FY 1986.

d. **LITTLE ROCK DISTRICT.** The District water quality management programs are divided among various elements of the Construction-Operations and Engineering and Planning Divisions by functional missions.

(1) **Construction-Operations Division Responsibilities.** The Permits Branch has the responsibility for conducting the District water quality program for Construction-Operations Division. Since the regulatory functions of the branch under the Section 10/404 permit program closely parallel functions of the division's water quality management program, field activities are very conveniently and efficiently combined to implement the programs. These responsibilities include the following programs relating to water quality management.

(a) **Lake Monitoring.** General lake water quality monitoring of all Little Rock District lakes other than the main stem of the Arkansas River is presently performed three times per year on each lake at six to eight stations at various depths. The fieldwork is done by USGS personnel under the Corps of Engineers Interagency Agreement. Approximately 26 parameters are measured to ascertain general lake water quality and to provide background data in detecting water pollution. There are no State or other Federal programs which routinely provided these data on the reservoirs operated by the Corps. Data obtained are maintained in the Permits Branch and are available from STORET and annual USGS water Resources Data Publications for Arkansas and Missouri. Data obtained are used to evaluate basic water quality, long and short term water quality changes, identify pollution sources, and properly manage lake water quality. Their evaluations include the identification of potential pollution sources so as to enable the Corps to have meaningful input in the decision making processes of other agencies and groups with regulatory authority over basin discharges. These findings are published in Water Quality Management Reports and annual updates for each project. The Greers Ferry and Table Rock Water Quality Management Reports have been published and the Blue Mountain report is in progress. A statistical analysis has been performed on data collection thus far (1974-present) and has proved to be very valuable. Bottom sediment samples were collected from eight LRD lakes in 1984 and have been analyzed for organics, nutrients, and metals.

(b) **Discharge Permit and Operational Monitoring.** Monitoring of Corps-operated wastewater treatment systems in the District is performed in accordance with NPDES permit requirements. The USGS obtains the necessary monthly samples and analyzes these for BOD, bacteria, and suspended solids. Operational monitoring performed twice weekly by the sewage treatment plant operators includes in some cases pH, flow, chlorine residual, dissolved oxygen, and settleability. Operational changes are recommended as necessary. This program is conducted in accordance with Section 402 of the Clean Water Act which requires quarterly reporting to Department of Natural Resources in Missouri and U.S.E.P.A. in Arkansas.

(c) **Bathing Beach Monitoring.** Monitoring is performed five times monthly by resident area personnel on District bathing beaches during the swimming season to insure safe bacteriological quality of lake waters. Samples are analyzed by the Missouri and Arkansas Health Department free of charge. A central log containing results for all projects is maintained by the Permits and Water Quality Section. This program is administered in accordance with SWD Regulation 1130-2-9 and applicable State laws.

(d) **Potable Water Monitoring.** Potable water supplies of the District are tested for physical, chemical, and bacteriological samples are collected by resident area personnel and mailed to the appropriate health departments, which presently perform the analysis free of charge. When tests indicate a bacteriological problem, corrective measures are immediately taken. In some cases chronic problems detected by this sampling causes wells to be replaced or reworked. Permits Branch personnel collect samples for complete chemical analysis by the health departments on each new water supply and for periodic nitrate analysis thereafter. Data obtained are used in the periodic sanitary survey and report forwarded to SWD for reporting to OCE. This program is conducted as per ER 1130-2-407 and applicable Federal and State drinking water standards for noncommunity water supply systems.

(e) **Dredged Material Analysis.** Periodically, a bottom sediment survey is performed at eight locations along the Arkansas River navigation project and less frequently at other locations on other District rivers and lakes. Sediment and water column samples are frozen and sent to SWD laboratory for sediment, water, and elutriate analyses. The purpose of this program is to detect potential effects of dredging operations on water quality, and to have these data available for future dredging proposed and the required 404(b) evaluations. These operations include both commerical dredging under Corps permits and channel maintenance dredging performed under Corps of Engineers contracts.

(f) **Pollution Complaints and Hazardous Substances.** Permits Branch and Resident Offices receive calls reporting instances of pollution and hazardous substances spills and coordinate these reports with appropriate Federal and State officials. On occasion, Corps personnel investigate these pollution complaints to verify existing conditions and determine effects on project operations. During oil and other hazardous substance spills, Corps personnel participate in notifictaion and other emergency measures with Coast Guard and EPA officials and when so designated, act as the Federal on-scene coordinator for these two agencies under the National Contingency Plan. The LRD Oil And Hazardous Substances Pollution-Contingency and Spill Prevention, Containment and Countermeasure Plan was rewritten and updated as of August 1983. LRD personnel participated with other state and local agencies in a natural disaster exercise in September 1985, which included a successful test of this plan.

(g) **Special Activities.** The Chief, Permits Branch, presently serves in an ex-officio capacity on the Beaver Lake Water Quality Advisory Committee, a committee established by the Arkansas Department of Pollution Control and Ecology to study the point and non-point sources of pollution in the Beaver Lake drainage basin and make recommendations to the Department for solutions to the problems being experienced there. Permits Branch occasionally assists Engineering and Planning Division in obtaining samples and analyses for special water quality studies conducted by that division, such as for planning purposes. Coordination is also accomplished with studies being performed by other agencies such as EPA, Health Department, Soil Conservation Service, etc. Cooperative water quality studies are periodically conducted with other agencies in monitoring activities authorized

under Corps Section 10 and 404 permits. A water quality monitoring program is presently underway to determine the possible effects of a permitted gravel removal operation on the White River at Sylamore. Permits Branch personnel are also involved on a daily basis with Personnel of Arkansas Department of Pollution Control and Ecology in the processing of Corps permits and resolving the water quality matters arising therein.

(2) **Engineering and Planning Division Responsibilities.** There is no specific organization for water quality studies within Engineering and Planning Division. Responsibility is assigned to the various elements based on the nature of the program or study.

(a) **Lake Profile and Release Monitoring.** Water quality data have been collected at Beaver, Table Rock, Bull Shoals, Norfork, and Greers Ferry Lakes since 1966; at Blue Mountain, Clearwater, and Nimrod Lakes since FY 81; and at DeQueen, Dierks, Gillham, and Millwood Lakes since April 1981. Presently, monthly profiles of pH, temperature, dissolved oxygen, and specific conductance are obtained from the 12 lakes, as well as a grab sample below each dam. Additional profiles are obtained from Table Rock Lake during critical times of the year. These data are used in the design of the operating features needed for preventing or lessening water quality problems downstream of the dams. They also contribute to the water control management activities required to maximize dissolved oxygen concentrations in the fall releases from Table Rock and to maintain acceptable temperatures downstream of all lake projects from May through October. Hydraulics Branch is responsible for this program and data collection is contracted to USGS.

(b) **Special Studies.** The Planning and Hydraulics Branches periodically conduct water quality studies as part of normal project planning efforts such as preparation of survey reports, design memorandums, and environmental impact statements. The Taylor Bay siltation study is an example of such studies. This study investigated the effects of suspended sediment on fishing in Taylor Bay near Augusta, Arkansas. The sources of the silt were identified and alternate solutions were developed. Nine measures have been identified for consideration as solutions. The technical studies have been completed and the report is scheduled for completion in 1986.

(3) **Laboratory Capabilities.** Water quality analyses performed at the District level are limited to the following capabilities:

(a) Field testing of water quality which may be conducted by Corps personnel includes dissolved oxygen, temperature, pH, specific conductivity, Secchi Disc measurements, and others using HACH field test kits approved by EPA.

(b) A small laboratory located in Construction-Operations Division can perform the following analyses: dissolved oxygen, color, turbidity, alkalinity, hardness, and others using colorimeter methods for analyses.

(4) **Data Management.** Lake water quality data collected and analyzed by USGS are entered into WATSTORE and STORET, the computerized data management systems of the USGS and EPA, respectively. These data are also published in the annual USGS water resources reports for Arkansas and Missouri. Results of potable water, bathing beaches, NPDES, and other monitoring are kept in log books or files as appropriate. Special data collection results are contained in the reports dealing with the specific subject for which data were collected.

e. Tulsa District. The Tulsa District's plan to determine existing water quality at all operating projects was continued in fiscal year 85. To date, 20 of 35 projects have been surveyed including Robert S. Kerr and Webbers Falls Reservoirs which were surveyed this past fiscal year. Environmental Resources Branch performed four water quality studies during fiscal year 1985.

a. Marion Lake, Kansas. Baseline water quality data were collected at Marion Lake during June, July, and September 1985. These data included field measurements of water temperature, dissolved oxygen, PH, and conductivity. Diurnal measurements of these parameters were also recorded on one date. One each sampling trip, water samples were collected at five sampling sites and returned to the lab for analysis of sulfates, chlorides, nutrients, heavy metals, and a variety of other water quality parameters. In addition to the lake study, data were collected under contract below Marion Lake in an attempt to relate lake releases to downstream water quality.

b. John Redmond Lake, Kansas. Four sampling sites were established at John Redmond Lake for the collection of baseline water quality data. Measurements of water temperature, dissolved oxygen, P_H, and conductivity were recorded in June, July, and August 1985. Water samples were also collected and analyzed for a number of physical, chemical, and biological water quality parameters. One sampling trip incorporated diurnal measurements of field data. A study of stream water quality below John Redmond Lake was performed by a private contractor.

c. Pat Mayse Lake, Texas. Water quality data were collected at Pat Mayse Lake on four dates during the summer of 1985. Field determinations of water temperature, dissolved oxygen, conductivity, P_H, alkalinity, and hardness were performed. Water samples from four sampling sites were also collected and analyzed for sulfates, nitrates, phosphates, chlorides, heavy metals, and numerous other water quality parameters on each sampling date. In addition to the collection of baseline data, experiments involving insitu measurements of sediment oxygen demand were performed.

d. Birch Lake, Oklahoma. Baseline water quality data were collected at four sampling locations on Birch Lake during June and July of 1985. Water samples were collected at varying depths at each station and returned to the lab for the determination of a number of physicochemical and biological water qauality parameters. Depth profiles of dissolved oxygen, P_H, conductivity, and water temperature were also recorded in the field on each date. Experiments aimed at evaluating the methodology of insitu determinations of sediment oxygen demand were also conducted at Birch Lake during the summer of 1985.

4. SEDIMENT PROGRAM AND ACTIVITIES.

a. Albuquerque District. New area-capacity tables were adopted on 1 January 1985 for Galisteo and Jemez Canyon Reservoirs. Letter reports describing and analyzing the reservoir sedimentation surveys were completed and forwarded to SWD. The Hydrologic Engineering Center, under contract with the District, undertook a sediment investigation on the Arkansas River between Pueblo, Colorado and John Martin Dam in 1984. The study was conducted primarily to analyze the future performance of various flood control alternatives in the vicinity of La Junta, Colorado with regard to channel stability, sediment movement and project maintenance. A draft report has been completed and is being reviewed at the District level.

b. **Forth Worth District.** Funds requested for sedimentation resurveys for Fiscal Year 1985 were not approved. Consequently, no sedimentation resurveys were accomplished during Fiscal Year 1985.

c. **Galveston District.** A sediment policy was established by the District to provide guidance relative to settling basins or alternative control methods on inflowing streams to reduce velocity and essentially preclude permanent deposition of sediment in the federally-owned lands of Addicks and Barker Reservoirs. The policy also attempts to place maintenance responsibility of the local channels with the county govenment. Surveys of silt accumulation in channel sections on Langham, Horsepen, South Mayde, and Mason Creeks were initiated in Fiscal Year 1985. Completion of channel surveys is expected during Fiscal Year 1986. Dredging in connection with navigation is shown in the following table.

NAVIGATION PROJECTS - DREDGING
(Cubic Yards)

Project	FY 84	FY 85 1/
Brazos Island Harbor	3,998,484	---
Corpus Christi Ship Channel	541,100	5,747,798
Freeport Harbor	155,784	3,556,478
Galveston Harbor	4,487,405	4,368,370
Houston Ship Channel	7,313,411	4,644,753
Matagorda Ship Channel	3,743,226	921,934
Sabine-Neches Waterway	11,325,938	9,222,827
Trinity River Channel	267,810	---
Texas City Channel	---	2,840,649
SUBTOTAL	33,793,158	31,302,809
GIWW		
Sabine River to Galveston	437,266	659,244
Galveston to Corpus Christi	4,696,402	6,401,374
Corpus Christi to Mexican Border	1,874,210	4,193,757
SUBTOTAL	**7,007,878**	**11,254,375**
TOTAL	**40,801,036**	**42,557,184**

1/ Premliminary Data Subject to Revision

d. LITTLE ROCK DISTRICT.

(1) **Summary of Activities.** Suspended sediment samples are collected at 17 stations. The 247 sediment ranges on the main stem of the Arkansas River are resurveyed as near annually as funds and survey workload permit.

From October 1984 through September 1985, there were 143 ranges scheduled for resurveying; 62 resurveys were accomplished. There are 185 ranges scheduled to be resurveyed in FY 86 and 62 more ranges tentatively scheduled if conditions allow. Fifty-six tributary ranges are resurveyed less frequently when appreciable deposits are suspected. About 50 index ranges out of 350 sediment ranges in the other eight lakes are resurveyed at 10-year intervals. During the period from October 1984 through September 1985, none were resurveyed. No other lakes are scheduled for resurvey during FY 86.

(2) **White River Entrance Channel Model.** The Entrance Channel Model is a physical, movable bed hydraulic model which has been constructed at Waterways Experiment Station (WES) to study the navigation depth problems which occur on the White River between its confluence with the Mississippi River and Lock and Dam 1.

This reach of the White River serves as the entrance to the Arkansas River Navigation System. Design of the model began during November 1981 and construction was completed during September 1982. Adjustment and verification tests were completed in September 1983. Tests with additional contraction works were completed in August 1984. A sediment trap plan is currently being tested and did not provide an acceptable navigation channel. Tests diverting Arkansas River flow into the entance channel have been completed. This improved the navigation channel but did not provide a reliable channel. The model is being revised to test a lock plan with the lock at navigation mile 0.5+.

(3) **Channel Maintenance.** Maintenance dredging to maintain navigable depths amounted to approximately 2.5 million cubic yards in FY 85. Approximately 1.5 million cubic yards were dredged on the Arkansas River, and approximately 1 million cubic yards were dredged on the White River Entrance Channel. This was an increase of about 1.1 million cubic yards from the FY 84 dredging requiements for the river system. Dredging was performed in Pools 2, 3, 4, 7, Lake Dardanelle, Ozark Lake, and the White River Entrance Channel under four contracts. Also, seven shoals in the navigation channel were removed by the Corps-operated Arkansas River Fleet with a dragline, two crane barges operated by the Resident Offices, and two contract crane barges. No locks were closed for unwatering and inspection this year. Approximately 36 groundings exceeding 1 hour each occurred on the navigation system in FY 85.

e. **Tulsa District.** During fiscal year 1985 the original survey of Skiatook Lake was completed. The resurveys of the sedimentation and degradation ranges initiated in fiscal year 1984 for ELk City Lake, Kansas; Pat Mayse Lake, Texas; and Lake Texoma, Oklahoma and Texas were completed by the end of February 1985. The resurveys of Hugo and Wister Lakes, Oklahoma; Kaw Lake, Oklahoma and Kansas; and Lock and Dam Number 13, Oklahoma and Arkansas were initiated with Wister Lake being completed by the close of fiscal year 1985. The remaining resurveys should be completed by 31 December 1985. Additional monumentation has been performed at Fort Supply and Heyburn Lakes, Oklahoma.

The Reservoir Sediment Data Summary showing the results of the 1983 resurvey of Marion Lake, Kansas is being reviewed by SWD. Suspended sediment samples were collected at 17 sites. The tapering of flood flows on the Arkansas River have been effective in reducing shoaling on the McClellan-Kerr Arkansas River Navigation System; however, 124,000 cubic yards were dredged in fiscal year 1985. These dredged locations were downstream of Lock and Dam 17, and Lock Dam 18 on the Verdigris River.

5. NAVIGATION ACTIVITIES.

a. **Galveston District.** The Consolidated Statement of tonnage handled by ports and moving on the Gulf intracoastal waterway is shown in the following table for calendar years 1982 and 1983.

(SHORT TONS)

	Ports	CALENDAR YEAR 1982	CALENDAR YEAR 1983
1.	Brownsville, Texas	2,200,132	1,338,550
2.	Port Isabel, Texas	307,856	284,758
3.	Corpus Christi, Texas	37,974,192	39,131,318
4.	Freeport, Texas	14,989,683	15,671,990
5.	Galveston, Texas	9,349,856	10,177,718
6.	Houston, Texas	94,649,549	88,706,519
7.	Texas City, Texas	33,370,791	35,496,241
8.	Sabine Pass Harbor, Texas	1,164,632	605,108
9.	Port Arthur, Texas	19,945,958	18,338,237
10.	Beaumont, Texas	33,286,791	36,001,675
11.	Orange, Texas	279,728	339,092
12.	Port Lavaca-Point Comfort	4,308,436	3,422,854
13.	Anahuac, Texas	31,122	-0-
14.	Moss Bluff, Texas	128,747	-0-
15.	Channel To Liberty, Texas	0	5,000
16.	Double Bayou, Texas	12,915	11,843
17.	Cedar Bayou, Texas	454,993	404,816
18.	Colorado River, Texas	380,744	392,933
19.	Sweeny, Texas	629,816	726,684

	Ports	CALENDAR YEAR 1982	CALENDAR YEAR 1983
20.	Palacios, Texas	86	54,545
21.	Dickinson, Texas	16,055	17,921
22.	Aransas Pass, Texas	12,243	959
23.	Port Mansfield, Texas	1,431	62,871
24.	Harlingen, Texas	862,969	702,242
25.	Channel to Victoria, Texas	2,744,633	3,342,181
26.	Chocolate Bayou, Texas	3,043,107	2,608,300
27.	Johnson Bayou, Louisiana	437,953	144,106
28.	Rockport, Texas	-0-	12
	TOTAL	**260,698,551**	**257,934,340**
Gulf Intracostal Waterway, Texas:			
(Traffic on Waterway)			
Sec. 1	(Sabine River to Galveston)	38,796,688	40,165,385
Sec. 2	(Galveston to Corpus Christi)	18,975,500	19,340,594
Sec. 3	(Corpus Christi to Mexican Border)	2,066,270	1,782,427
	TOTAL	59,838,458	61,288,406

b. **Little Rock District.** Projections indicate that about 8.4 million tons of commerce will be moved on the McClellan-Kerr Arkansas River Navigation System in CY 85. This represents a decrease of 11 percent from the CY 84 level. Commodities moved consisted of iron and steel, chemicals and chemical fertilizers, petroleum products, coal, sand and gravel, rock, soybeans, wheat and other grains, and miscellaneous commodities. Inbound movements are predicted to be increased by 21 percent and outbound movements by 21 percent.

	1984* (Tons)	1985** (Tons)
Inbound	2,128,000	2,140,000
Outbound	4,264,000	3,370,000
Internal	2,433,000	2,430,000
Through	664,000	500,000
Total	9,489,000	8,440,000

***Unofficial figures**

****Projected figures**

c. **Tulsa District.** Commerical movements in Oklahoma are about 16 percent less than in 1984. Petrolem products and farm products showed the greatest gain while all other commerical movements slumped. The inbound-outbound tonnage ratio has increased to about 1:2.2 from about 1:7 in 1977.

6. **Cooperative Programs.**

a. **Albuquerque District.** The cooperative stream gaging program with the U.S. Geological Survey covered 43 stations in FY 85. Total program cost for FY 85 is shown in Table VI-1. Program cost for FY 86 will be $184,450. The following is a summary of stations by river basin:

STATION SUMMARY

Basin	Stream	Reservoir	Total
Arkansas	5	2	7
Canadian	3	1	4
Rio Grande	17	4	21
Pecos	8	3	11

Note: 6 gages are not associated with project operation.

b. **Fort Worth District.**

(1) **National Weather Service.** Funds were transferred by SWF to the NWS in the amount of $77,260 for FY 1985. Under on-going programs the Corps collects rainfall at project offices while the NWS collects all other rainfall reports and maintains weather stations, including those at Corps' projects. Rainfall summaries are transmitted to the Corps via teletype, telephone, and a daily computer printed map which displays current totals for reporting stations. Supplemental and accumulative storm total printouts are provided upon request. Additional hydrometeorological information was received from the NWS via the teletype circuits and AFOS. Radar scans were obtained on a Kavouras radar acquisition access and display terminal via a direct connection to the NWS Stephenville radar site (which covers the geographic area where the majority of the District's projects are concentrated) and via commerical long-distance telephone into NWS radar sites at Galveston, Hondo, and Brownsville, Texas and into Oklahoma City, Oklahoma. Conti ous updates are possible during storm periods.

(2) **U.S. Geological Survey.**

(a) **General.** The USGS performed operation and maintenance on all streamflow, lake level, and some water quality stations in cooperation with the District. In addition, they arranged for reporting of river stages during flood events, made supplemental flow measurements, and processed all published data.

(b) **Funds.** The Fort Worth District transferred to the USGS for the Cooperative Stream Gaging Program a total of $575,000 in FY 1985. Table VI-2 indicates the number of stations, the types of funds for each of several groups of stations and both the USGS and CE contributions toward the total station cost. Total Program Cost for FY 86 will be $693,800.

c. Galveston District.

(1) U. S. Geological Survey. Two cooperative programs are currently in existence with the USGS. One provides the operation and maintenance for stream gages and the second provides the operation and minor maintenance for Data Collection Platforms. The total program cost for FY 1985 is shown in Table VI-3. The total program cost for FY 1986 will be $168,970.

(2) National Weather Service. The cooperative program with the NWS provides for the operation and maintenance of precipitation gages and for the transmission of rainfall summaries via teletype circuits. The total program cost for FY 1985 was $6,367. The total program cost for FY 1986 will be $6,683.

d. Little Rock District. Approximately 202 rainfall and/or river stage reporting stations were operated by the National Weather Service and the Corps of Engineers in or near the Little Rock District. Of these, 117 stations are in the Corps of Engineers/National Weather Service program. The remaining 85 stations are operated solely by the National Weather Service within or near the Little Rock District. Six of these stations are airway stations that report at 6-hour intervals. Reports from these stations are used in forecasting streamflows for flood warning and operation of reservoir projects. The stream gaging data required by the District are collected under a cooperative agreement with the USGS. During the fiscal year, 108 stations were operated. Of these, 76 were operated cooperatively and 32 were operated by the Corps of Engineers. The FY 85 total cost for collection of streamflow and sediment data was $561,300 of which $396,720 was transferred to USGS. Program cost for FY 85 is shown in Table VI-4. The FY 86 cooperative program cost is $536,330 of which $398,830 will be transferred to USGS.

e. Tulsa District.

(1) Stream Gaging Program. Much of the information required for water control, hydrologic investigation and design of our water resources projects results from the reporting and measurement of flow, water quality, and sediment provided by a cooperative stream gaging program with the USGS. During fiscal year 85, this cooperative program included 292 stations of which 31 were operated independently by the Corps of Engineers. The stream gaging program in the Tulsa District cost $1,036,730 in fiscal year 85 with $666,440 of this being transferred to the USGS for operation of stations and data publication. Table VI-5 shows a breakdown of the program by class of funds used to finance the program. The total program cost for FY 86 will be $1,394,660.

(2) Reporting Network Program. Real-time water control and investigation and design of our water resources projects requires the measurement and reporting of rainfall and evaporation data. These data are provided through a cooperative program with the National Weather Service. During fiscal year 85, the rainfall and evaporation program in the Tulsa District cost $117,027 through transfer of funds to the National Weather Service.

7. Annual Flood Damages Prevented Per River Basin.

(a) Albuquerque District. The following is a listing of damages prevented by Corps and Section 7 projects during FY 85.

Damages Prevented in Thousands of Dollars

Basin	Project	Damages Prevented
Arkansas	John Martin	0
	Pueblo	234
	Trinidad	0
Canadian	Conchas	0
Rio Grande	Abiquiu	47,242
	Cochiti	70,585
	Glaisteo	0
	Jemez Canyon	1,679
	Platoro	245
Pecos	Santa Rosa	0
	Sumner	0
	Two Rivers	142

b. **Fort Worth District.** Annual flood damages prevented by both Corps and Section 7 Projects are shown in the following Table.

ANNUAL FLOOD DAMAGE PREVENTED

CORPS AND SECTION 7 Projects	DAMAGES PREVENTED FY 85 $ x 1000	CUMULATIVE BENEFITS THRU FY 85 $ x 1000
BRAZOS RIVER BASIN		
Belton	$ 0	$ 105,983.0
Georgetown	216.0	3,831.0
Granger	1,942.0	8,523.0
Proctor	0	5,167.0
Somerville	0	30,437.0
Stillhouse Hollow	0	20,597.0
Waco	0	58,732.0
Whitney	0	131,516.0
Subtotal	$ 2,158.0	$ 364,786.0
COLORADO RIVER BASIN		
Hords Creek	$ 0	$ 937.0
O.C. Fisher	0	2,376.0
Subtotal	$ 0	$ 3,313.0
GUADALUPE-SAN ANTONIO RIVER BASIN		
Canyon	$ 4,800.0	$ 54,424.0
San Antonio	0	44,056.0
Subtotal	$ 4,800.0	$ 98,480.0

ANNUAL FLOOD DAMAGES PREVENTED (Cont'd)

NECHES RIVER BASIN		
Sam Rayburn	$ 1,729.0	$ 76,263.0
Subtotal	$ 1,729.0	$ 76,263.0
NUECES RIVER BASIN		
Pleasanton	$ 0	$ 115.0
Subtotal	$ 0	$ 115.0
RED RIVER BASIN		
Lake O' the Pines	$ 0	$ 6,139.0
Wright Patman	0	13,697.0
Subtotal	$ 0	$ 19,836.0
TRINITY RIVER BASIN		
Bardwell	$ 373.0	$ 9,033.0
Benbrook 1/	10.0	48,314.0
Big Fossil	0	6,268.0
Grapevine 2/	3,435.0	804,443.0
Lavon	2,304.0	84,008.0
Navarro Mills	401.0	25,978.0
Subtotal	$ 6,523.0	$ 978,044.0
CORPS AND SECTION 7 PROJECTS	**DAMAGES PREVENTED FY 85 $ x 1000**	**CUMULATIVE BENEFITS THRU FY 85 $ x 1000**
COLORADO RIVER BASIN 3/		
Marshall Ford	$ 0	$178,551.0
Twin Buttes	0	418.0
Subtotal	$ 0	$178,969.0
Total	**$ 15,210.0**	**$1,719,805.0**

1/ Includes Fort Worth Floodway System

2/ Includes Lewisville and Dallas Floodway System

3/ Built by Bureau of Reclamation but under Coprs Flood Control jurisdiction

c. **Galveston District.** Annual flood damages prevented by Corps projects are given in the following table. There are no section 7 Projects within the District.

Projects	Flood Damages Prevented ($000) Total for FY 85	Cumulative Total
Addicks and Barker	18,800	101,462
Brays Bayou	0	206,811
White Oak Bcyou	0	20,839
Lavaca-Navidad Rivers	0	637
Tranquitas Creek	0	5,333
San Diego Creek	0	2,908
Texas City, Texas (Hurricane-Flood)	0	10,614
Colorado Rive, Matagorda	0	844
Galveston Seawall	0	400,000
Vince Bayou	0	2,582
Port Arthur (Hurricane-Flood)	0	4,000
Freeport (Hurricane-Flood and Tide Gate)	0	8,000
Total	18,800	764,030

d. **Little Rock District.** The table below presents the flood damages prevented in the Little Rock District for FY 84 and FY 85. The damages prevented were especially high in FY 85 due to the high flows under natural conditions along the White and Black Rivers. Approximately 56 percent of the White River Basin benefits are to nonagriculture such as urban properties. For instance there were two events at Batesville where the natural flows equaled the December 1982 modified flows for which the city of Batesville reported $7 million losses.

FLOOD DAMAGES PREVENTED BY RESERVOIRS AND LEVEES LITTLE ROCK DISTRICT

Arkansas River Basin	FY 84 Damages Prevented $	FY 85 Damages Prevented $
Levees	5,113,000	9,339,000
Reservoirs	1,306,000	4,599,000
White River Basin		
Levees	1,385,000	2,880,000
Reservoirs	7,793,000	51,947,000
Little River Basin		
Reservoirs	600,000	819,000
Total for LRD Levees and Reservoirs	**16,197,000**	**69,584,000**

e. **Tulsa District.** Flood damages prevented by Tulsa District lakes in the Arkansas River Basin and the Red River Basin amounted to $68,053,000 and $16,135,000, respectively during Fiscal Year 1985. The cumulative totals of damages prevented by the

lakes are $734,125,000 for the Arkansas River Basin and $127,092,000 for the Red River Basin. The following table is a breakdown of all lakes in these two basins.

FLOOD DAMAGES PREVENTED BY COMPLETE AND ESSENTIALLY COMPLETED PROJECTS - TULSA DISTRICT (ARRANGED BY BASIN)

ARKANSAS RIVER BASIN	FY 1985	THRU 30 SEPT 1985 CUMULATIVE
Big Hill	$ -0-	$ 63,000
Birch	1,664,000	4,500,000
Canton	-0-	6,713,000
Cheney	18,000	7,266,000
Copan	5,310,000	13,974,000
Council Grove	2,548,000	14,860,000
El Dorado	25,000	208,000
Elk City	838,000	38,876,000
Eufaula	678,000	45,961,000
Fall River	938,000	31,029,000
Fort Gibson	449,000	34,083,000
Fort Supply	-0-	3,064,000
Great Salt Plains	-0-	13,246,000
Heyburn	1,842,00	6,381,000
Hulah	12,096,000	84,599,000
John Redmond	7,200,000	64,368,000
Kaw	656,000	14,287,000
Keystone	8,161,000	99,386,000
Marion	4,084,000	31,367,000
Markham Ferry	179,000	5,751,000
Norman	3,444,000	7,153,000
Oologah	4,058,000	50,934,000
Optima	0	7,000
Pensacola	504,000	39,370,000
Sanford	0	6,000
Skiatook	5,574,000	11,240,000
Tenkiller Ferry	99,000	12,027,000
Toronto	2,671,000	28,000,000
Wister	5,017,000	65,406,000
TOTAL ARKANSAS BASIN	**68,053,000**	**734,125,000**

RED RIVER BASIN	FY 1985 $	THRU 30 SEP 1985 Cumulative $
Altus	0	3,295,000
Arbuckle	52,000	426,000
Broken Bow	3,814,000	15,046,000
Denison	4,701,000	63,276,000
Fort Cobb	0	629,000
Foss	0	1,272,000
Hugo	1,379,000	7,092,000
Lake Kemp	105,000	3,129,000
Mountain Park	11,000	535,000
Pat Mayse	149,000	3,868,000
Pine Creek	1,234,000	10,112,000
Sardis (Clayton)	1,469,000	2,795,000
Waurika	3,221,000	15,617,000
TOTAL RED BASIN	16,135,000	127,092,000
GRAND TOTAL	84,188,000	861,217,000

8. **Annual Flood Damages, By State.**

a. **Albuequerque District.** Annual Flood Damages prevented during FY85 for the states of Colorado and New Mexico are shown in the following table.

STATE	DAMAGES PREVENTED ($1,000)
Colorado	338
New Mexico	119,648
TOTAL	**119,986**

b. **FORT WORTH DISTRICT.** Annual Flood Damages Prevented by Corps Projects for the Past year in the State of Texas were $15,210,000.

c. **GALVESTON DISTRICT.** Annual flood Damages Prevented in the State of Texas by Corps Projects were $18,800,000.

d. **LITTLE ROCK DISTRICT.** Annual Flood Damages Prevented by Corps Projects for FY 85 in the States of Arkansas and Missouri are shown below.

STATE	DAMAGES PREVENTED ($1,000)
Arkansas	53.2
Missouri	16.4
TOTAL	**69.9**

e. TULSA DISTRICT. Annual Flood Damages Prevented by complete and essentially completed projects for the States of Kansas, Oklahoma and Texas during FY85 are shown below.

STATE	DAMAGES PREVENTED ($ 1,000)
Kansas	18,322
Oklahoma	60,911
Texas	5,955
TOTAL	**84,188**

9. **Annual flood damages, by state, prevented by corps supported emergency operations.**

a. ALBUQUERQUE DISTRICT. Damages Prevented by the District's support in emergency operations are listed below.

STATE	DAMAGES PREVENTED ($ 1,000)
Colorado	5,500
New Mexico	300
TOTAL	**5,800**

b. FORT WORTH DISTRICT. None

c. GALVESTON DISTRICT. None

d. LITTLE ROCK DISTRICT. Through emergency support operations the district prevented $639,000 in the State of Arkansas.

e. TULSA DISTRICT. None

10. **Lake Attendance**

a. **Albuequerque District.** The following is a listing of attendance for Corps and Section 7 projects in the Albuquerque District.

Project Attendance in Thousands

Project	YEAR 1981	1982	1983	1984	1985
Abiquiu	161.8	233.0	298.5	331.9	338.6
Cochiti	335.7	429.0	498.9	519.5	716.6
Conchas	258.6	159.0	268.6	331.9	449.7
Galisteo	3.1	3.0	5.2	5.1	7.6
Jemez Canyon	31.4	10.0	20.2	44.9	51.0
John Martin	522.9	613.0	639.5	698.9	742.5

Project Attendance in Thousands
YEAR (Cont'd)

Santa Rosa	59.7	109.0	182.6	240.8	248.2
Trinidad	351.4	450.0	121.7	164.9	275.4
Two Rivers	4.1	4.0	2.8	11.6	62.7
Pueblo	701.6	604.9	675.0	906.8	1,355.4
Platoro	2.6	2.5	9.8	21.5	17.4
Sumner	202.1	203.0	142.2	137.7	129.7

b. **Fort Worth District.** The following is a listing of lake attendance for both Corps and Section 7 Projects for Fiscal Years 1981 through 1985.

TOTAL PERSONS VISITING PROJECTS

Project	1981	1982	1983	1984	1985
Aquilla	--	--	--	26,590	100,398
Bardwell	985,812	1,000,308	977,823	974,819	984,648
Belton	4,083,197	2,449,310	2,446,444	2,355,254	2,307,521
Benbrook	2,078,136	2,007,943	2,020,447	3,083,414	2,504,101
Canyon	1,790,585	1,947,624	1,993,582	2,327,006	2,316,739
Georgetown	519,048	821,270	838,583	889,405	1,064,732
Granger	195,848	284,043	319,600	256,125	322,139
Grapevine	5,721,424	4,231,149	4,482,409	4,932,223	4,315,270
Hords Creek	520,119	829,561	833,248	805,937	577,994
Lake O'The Pines	3,981,742	4,979,192	5,243,834	3,116,076	2,392,225
Lavon	2,887,615	2,861,682	2,897,765	3,121,115	4,072,512
Lewisville	8,997,119	6,701,115	6,683,116	6,482,032	5,752,444
Navarro Mills	1,172,009	1,203,233	1,202,752	1,370,974	1,540.478
O.C. Fisher	1,040,331	3,210,221	834,256	1,328,883	787,268
Proctor	2,473,397	787,569	1,687,763	916,096	962,706
Sam Rayburn	912,716	1,690,258	3,304,133	3,094,293	3,258,250
Somerville	3,170,970	3,391,749	3,159,744	2,057,820	1,639,849
Stillhouse	1,176,788	981,487	909,148	987,303	915,182
Town Bluff	666,254	605,069	614,215	627,886	707,695
Waco	4,079,208	4,198,419	4,225,481	4,683,306	4,599,839
Whitney	3,093,766	2,579,171	2,236,552	2,056,072	2,249,653
Wright Patman	4,497,648	4,652,589	4,829,095	2,220,918	2,320,332
Twin Buttes	--	--	--	--	--
Marshall Ford	--	--	--	--	--

c. **Galveston District.** N/A

d. **Little Rock District.** Lake attendance for all Little Rock District lakes by calendar year is as follows:

ATTENDANCE

	1981	1982	1983	1984	1985
All Projects	39,848,600	43,105,000	42,770,000	42,173,000	43,000,000 (EST)

e. **Tulsa District.** The following is a listing of lake attendance figures for Calender Years 1981 through 1984. Lake attendance data are not available for FY 85; however, records through August 1985 indicate that it will be equal to the 1984 attendance.

ATTENDANCE AT CORPS OF ENGINEERS PROJECT IN THOUSANDS

Lake	1981	1982	1983	1984
Great Salt Pl.	582.7	647.6	433.9	297.4
Fort Supply	517.1	832.2	789.6	898.7
Canton	2446.1	3379.8	2822.0	2738.1
Hulah	422.0	469.7	328.5	428.7
Tenkiller	3442.1	3088.2	2133.9	2065.1
Wister	969.4	786.7	881.6	971.1
Keystone	4601.1	3050.6	3105.0	2627.3
Oologah	2529.1	2432.1	2523.7	3003.4
Fort Gibson	4403.7	4484.3	3544.3	3881.8
Fall River	156.7	214.0	275.0	209.7
Toronto	226.4	220.7	187.5	145.6
Elk City	247.8	299.0	269.5	253.1
Optima	121.5	170.7	190.7	178.1
Pat Mayse	460.5	519.2	379.0	370.1
Eufaula	4114.5	4560.8	4059.3	4162.5
Heyburn	274.3	394.2	296.1	275.0
Hugo	917.1	893.2	844.1	937.3
Lake Texoma	12400.1	10679.6	9768.2	8324.3
Waurika	517.5	761.4	818.3	850.3
John Redmond	540.0	496.1	388.0	313.5
Council Grove	422.4	454.6	512.5	512.0
Broken Bow	970.6	1033.4	967.5	861.0
Marion	329.7	304.4	281.9	235.3
Pine Creek	944.1	865.7	727.1	847.9
Robert S. Kerr	1577.6	1129.8	1025.8	1042.9
WD Mayo L+D	264.0	224.6	210.5	221.0
Chouteau L+D	368.0	420.3	291.3	421.6
Newt Graham L+D	504.6	537.2	379.6	458.6
Webbers Falls	936.0	832.1	779.9	942.5
Birch	423.2	480.4	335.4	343.1
Kaw	1672.7	1483.1	1107.8	1051.0
Big Hill	-	349.1	443.2	431.4
Sardis	-	-	31.7	311.9
El Dorado	-	-	210.6	503.1
Copan	-	-	8.5	214.4
DISTRICT TOTAL	**48453.2**	**46494.8**	**41351.5**	**41330.0**

11. **Water Supply Storage.**

a. **Albuquerque District.** Cochiti, Galisteo, Jemez Canyon and Two Rivers projects do not have storage allocated for water supply. The following table is a listing of those reservoirs with space allocated.

STORAGE IN THOUSANDS OF ACRE-FEET

Project	Storage Allocated	Amount Contracted	Number of Contract	WATER SUPPLIED FY 84	WATER SUPPLIED FY 85
Conchas	259	0	0	81.3	74.0
John Martin	345	0	0	106.6	120.3
Santa Rosa	200	0	0	38.9	25.4
Trinidad	20	0	0	38.5	21.3
Abiquiu	200	170.9	1	0	0

b. **Fort Worth District.** Water supply information per project is tabulated as follows:

Project	Storage Allocated (Ac-Ft)	Amount Contracted (Ac-Ft)	Number of Contract (Users)	WATER SUPPLIED FY 85 (Ac-Ft)
Aquilla Lake	33,600	33,600	1	2,200
B. A. Steinhagen Lake	1/	1/	1	1,583,000
Bardwell Lake	42,800	42,800	1	4,000
Belton Lake	372,700	372,700	2	52,900
Benbrook Lake	23,708	23,708 2/	2	4,400
Canyon Lake	366,400	366,400	1	360,000
Georgetown	29,200	29,200	1	560
Granger Lake	37,900	37,900	1	0
Grapevine Lake	161,250	161,250	3	21,800
Hords Creek Lake	5,780	5,780	1	10
Lake O' The Pines	250,000	250,000	1	12,900
Lavon Lake	380,000	220,000 3/	1	95,900
Lewisville Lake	436,000	436,000	2	140,000
Navarro Mills Lake	53,200	53,200	1	7,900
O. C. Fisher Lake	80,400	80,400	1	3,000
Proctor Lake	31,400	31,400	1	18,200
Sam Rayburn Reservoir	43,000	43,000	2	0
Somerville Lake	143,900	143,900	2	11,700
Stillhouse Hollow Lake	204,900	204,900	1	0
Waco Lake	104,100	104,100	2	26,200
Whitney Lake	50,000	50,000	1	34,700
Wright Patman Lake	91,263	91,263	1	57,500

1/ LNVA is permitted to withdraw from B.A. Steinhagen Lake not to exceed 2,000 c.f.s. This lake acts as a reregulation dam to Sam Rayburn Reservoir.

2/ Remaining 48,792 ac-ft of navigation storage is in the process of being negotiated for water supply.

3/ NTMWD has given assurances for an additional 160,000 ac-ft of storage in Lavon Lake.

c. GALVESTON DISTRICT. None.

d. LITTLE ROCK DISTRICT water supply contracts and usage in FY 84 and 85 are summarized by project in the following table.

WATER SUPPLY USAGE SUMMARY

Project	Amount of Storage Allocated (AC-Ft)	Amount Contracted (AC-Ft)	Number of Contracts	Amount of Water Supplied (AC-Ft) FY 84	FY 85
Beaver Lake	117,000	117,000	2	28,254	29,110
Greers Ferry Lake	1,215	1,215	3	1,586	1,890
Norfork Lake	2,400	2,400	1	2,228	2,099
Nimrod Lake	33	33	1	85	73
Dierks Lake	10,100	10,100	1	230	246
Millwood Lake	150,000	150,000	1	45,924	49,045
Gillham Lake	20,600	20,600	1	607	721
DeQueen Lake	17,900	0	0	0	0

e. Tulsa District. Storage allocated to water supply totals 3,838,300 acre-feet in the Tulsa District. The Corps has 2,221,280 acre-feet in 30 projects while the Section 7 projects totaled 1,617,020 acre-feet in 10 projects. The following is a project listing showing water supply storage, yield, amount contracted, number of contracts (existing and pending), and usage.

WATER SUPPLY STORAGE

Corps of Engineers Projects
(October 1985)

	STORAGE ALLOCATED TO WATER SUPPLY AF	ESTIMATED YIELD MGD	AMOUNT CONTRACTED AF	NUMBER OF CONTRACTS EXISTING	NUMBER OF CONTRACTS PENDING	AMOUNT SUPPLIED AF FY 84	AMOUNT SUPPLIED AF FY 85
ARKANSAS RIVER BASIN							
ARCADIA (1)	23090	11	23090	1	0	0	0
BIG HILL	25700	8.5	25700	1	0	0	196
BIRCH	7630	3	0	0	0	0	0
CANDY (1)	41460	7.7	41460	1	0	0	0
CANTON	107000 (2)	12	90000	2	0	0	14359
COPAN	7500	3	5000	1	2	84	85
COUNCIL GROVE	24400	6	24400	1	0	570	291
EL DORADO	142800	22.2	142800	1	0	6940	7285
ELK CITY	24300	10	24300	1	0	76	62
EUFAULA	56000	50	4943	27	3	2000	1940
FORT GIBSON	0	0	0	0	0	13740	14485
FORT SUPPLY	400	0.2	400	1	0	229	154
HEYBURN	2000 (3)	1.7	2000	3	0	1823	1648
HULAH	19800	12.4	19800	3	0	7793	4764
JOHN REDMOND	34900	24.5	34900	1	0	339	617

WATER SUPPLY STORAGE

Corps of Engineers Projects
(October 1985)

PROJECT	STORAGE ALLOCATED TO WATER SUPPLY AF	ESTIMATED YIELD MGD	AMOUNT CONTRACTED AF	NUMBER OF CONTRACTS EXISTING	NUMBER OF CONTRACTS PENDING	AMOUNT SUPPLIED AF FY 84	AMOUNT SUPPLIED AF FY 85
KAW	171200	167	90802	4	0	0	5567
KEYSTONE	20000	20	19285	5	2	4657	5620
MARION	38300	3	38300	1	0	715	891
OOLOGAH	342600	154	55680	9	0	49810	44411
OPTIMA	76200	4.5	0	0	0	0	0
SKIATOOK	62900	14	2060	2	4	0	0
TENKILLER	25400	16	18707	38	0	6860	5074
TORONTO	400	0.1	400	2	0	86	73
WISTER	9600	6	6400	2	1	3120	2820
RED RIVER BASIN							
BROKEN BOW	152500	175	0	0	1	0	0
HUGO	47600	58	44890	3	0	5032	4337
PAT MAYSE	109600	55	109600	1	0	12830	12426
PINE CREEK	49400	84	28800	1	0	33708	33623
SARDIS	297200	140	297200	1	0	0	0
TEXOMA (4)	150000	150	41000	6	2	4100	5900
WAURIKA	151400	36.2	41800	4	1	5837	5837

WATER SUPPLY STORAGE

SECTION 7 PROJECTS
(October 1985)

PROJECT (5)	STORAGE ALLOCATED AF	AMOUNT WITHDRAWN AF FY 84	FY 85
ARKANSAS RIVER BASIN			
CHENEY	146980	23289	21925
HUDSON	0	0	0
MEREDITH	499700	75358	73162
THUNDERBIRD	105900	13329	17342
RED RIVER BASIN			
ALTUS	122900	54286	30787
ARBUCKLE	62570	7257	8685
FORT COBB	78350	6815	7750
FOSS	243670	2352	3282
LAKE KEMP	268000	124071	59588
MOUNTAIN PARK	88950	6659	5904

(1) Under construction.
(2) Based on 1979 Sedimentation Survey. Data shown is for present operations providing 90000 acre-feet of storage.
(3) Estimated storage to be available in year 2000.
(4) Joint water supply and power provided between elevation 617.0 - 590.0.
(5) Estimated yield and contract information not available.

TABLE VI-1

STATION SUMMARY
COOPERATIVE STREAM GAGING PROGRAM
FISCAL YEAR 1985

ALBUQUERQUE DISTRICT

	GENERAL INVESTIGATIONS		CONSTRUCTION GENERAL					CORPS	
	STUDIES	GEN. COV	PLAN APRO	PROJ. CONST	O&M	MRRI	CORPS TOTAL	PER-CENT	PROGRAM SUPPORT
FUNDS (DOLLARS)									
GAGE CLASS - SW	0	9,620	0	0	143,420	0	153,040	0	0
- QW	0	0	0	0	0	0	0	0	0
- SS	4,300	0	0	0	9,320	0	13,620	0	0
- QI	0	0	0	0	0	0	0	0	0
TOTAL	4,300	9,620	0	0	152,740	0	166,710	0	0
PERCENT	2.6	5.8	0.0	0.0	91.6	0.0	100.0		
NUMBER OF EQUIVALENT GAGES FUNDED									
GAGE CLASS - SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- QW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- SS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- QI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0

NUMBER OF GAGING STATIONS/SITES: 43

NUMBER OF GAGES FUNDED 100% BY COOP PROGRAM: 0

TABLE VI-2

STATION SUMMARY
COOPERATIVE STREAM GAGING PROGRAM
FISCAL YEAR 1985

FORT WORTH DISTRICT

	GENERAL INVESTIGATIONS		CONSTRUCTION GENERAL					COOPS	
	STUDIES	GEN. COOP	PLAN AE&D	PROJ. CONST	O&M	MR&T	COOPS TOTAL	PERCENT	PROGRAM SUPPORT
FUNDS (DOLLARS)									
GAGE CLASS - SW	14,470	0	12,320	33,020	372,930	0	432,740	0	0
- QW	0	0	4,350	17,400	120,510	0	142,260	0	0
- SS	0	0	0	0	0	0	0	0	0
- QT	0	0	0	0	0	0	0	0	0
TOTAL	14,470	0	16,670	50,420	493,440	0	575,000	0	0
PERCENT	2.5	0.0	2.9	8.8	85.8	0.0	100.0		
NUMBER OF EQUIVALENT GAGES FUNDED									
GAGE CLASS - SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- QW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- SS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- QT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0

NUMBER OF GAGING STATIONS/SITES: 112

NUMBER OF GAGES FUNDED 100% BY COOP PROGRAM: 0

TABLE VI-4

STATION SUMMARY
COOPERATIVE STREAM GAGING PROGRAM
FISCAL YEAR 1985

LITTLE ROCK DISTRICT

	GENERAL INVESTIGATIONS		CONSTRUCTION GENERAL					CORPS	
	STUDIES	GEN. INV	PLAN & SPEC	PROJ. CONST	O&M	MR&T	CORPS TOTAL	PER-CENT	PROGRAM SUPPORT
FUNDS (DOLLARS)									
GAGE CLASS - SW	0	31,160	0	0	357,400	0	388,560	0	0
- GW	0	0	0	0	0	0	0	0	0
- SS	0	1,940	0	0	6,220	0	8,160	0	0
- OT	0	0	0	0	0	0	0	0	0
TOTAL	0	33,100	0	0	363,620	0	396,720	0	0
PERCENT	0.0	8.3	0.0	0.0	91.7	0.0	100.0		
NUMBER OF EQUIVALENT GAGES FUNDED									
GAGE CLASS - SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- GW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- SS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- OT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0

NUMBER OF GAGING STATIONS/SITES: 76

NUMBER OF GAGES FUNDED 100% BY COOP PROGRAM: 0

TABLE VI-5

STATION SUMMARY
COOPERATIVE STREAM GAGING PROGRAM
FISCAL YEAR 1985

GALVESTON DISTRICT

	GENERAL INVESTIGATIONS		CONSTRUCTION GENERAL					CORPS	
	STUDIES	GEN. COV	PLAN APPR	PROJ. CONST	O&M	MRRI	CORPS TOTAL	PER-CENT	PROGRAM SUPPORT
FUNDS (DOLLARS)									
GAGE CLASS - SW	2,830	2,830	0	6,160	136,160	0	147,980	0	0
- QW	0	0	0	0	0	0	0	0	0
- SS	0	0	0	0	0	0	0	0	0
- OT	0	0	0	0	0	0	0	0	0
TOTAL	2,830	2,830	0	6,160	136,160	0	147,980	0	0
PERCENT	1.9	1.9	0.0	4.2	92.0	0.0	100.0		
NUMBER OF EQUIVALENT GAGES FUNDED									
GAGE CLASS - SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- QW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- SS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- OT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0

NUMBER OF GAGING STATIONS/SITES: 34

NUMBER OF GAGES FUNDED 100% BY COOP PROGRAM: 0

TABLE VI-5

STATION SUMMARY
COOPERATIVE STREAM GAGING PROGRAM
FISCAL YEAR 1985

TULSA DISTRICT

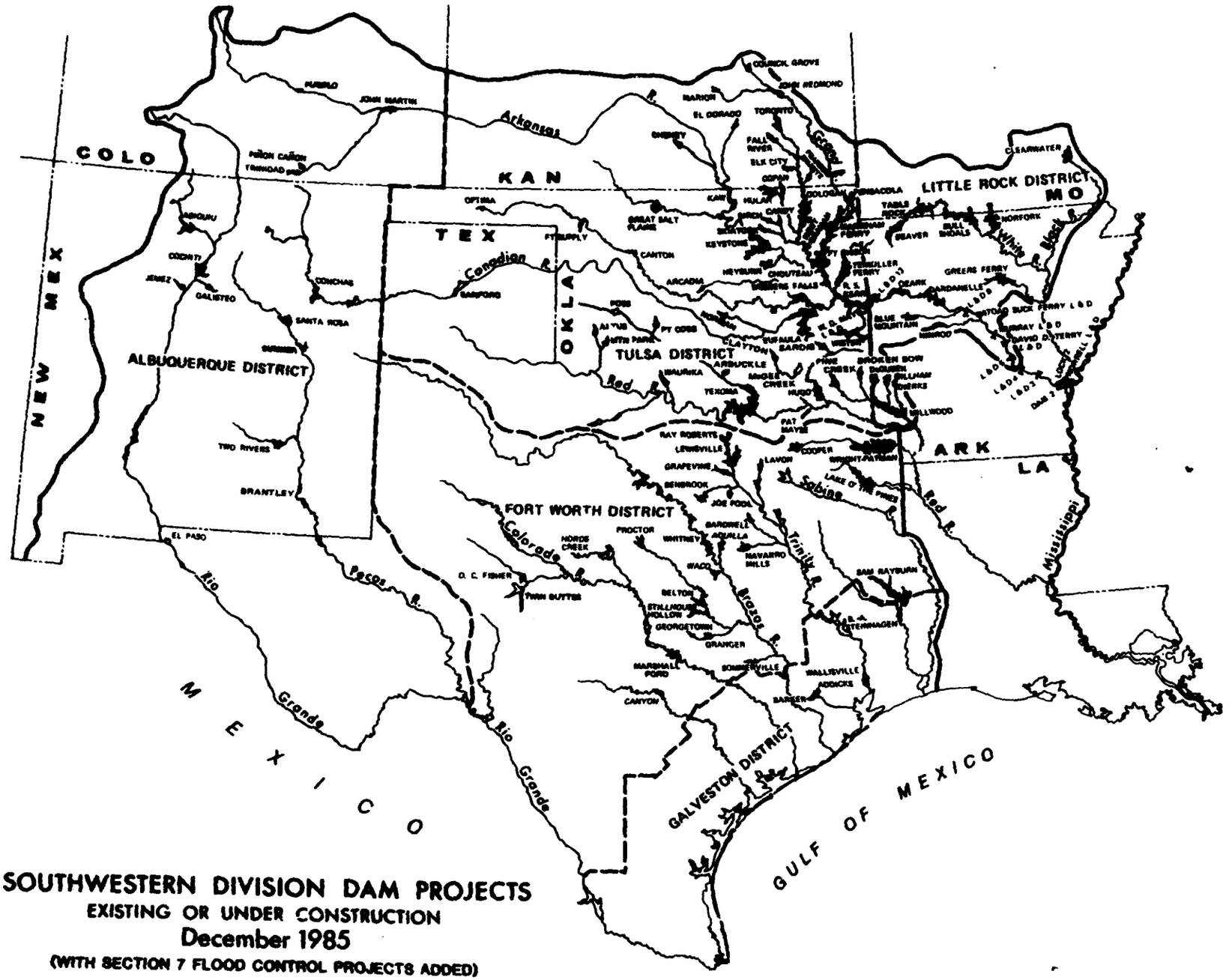
	GENERAL INVESTIGATIONS		CONSTRUCTION GENERAL					CORPS	
	STUDIES	GEN. COV	PLAN AE&D	PROJ. CONST	O&M	MR&T	CORPS TOTAL	PER-CENT	PROGRAM SUPPORT
FUNDS (DOLLARS)									
GAGE CLASS - SW	0	0	0	0	580,470	0	580,470	0	0
- QW	0	0	0	0	74,130	0	74,130	0	0
- SS	0	0	0	0	11,840	0	11,840	0	0
- QT	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	666,440	0	666,440	0	0
PERCENT	0.0	0.0	0.0	0.0	100.0	0.0	100.0		
NUMBER OF EQUIVALENT GAGES FUNDED									
GAGE CLASS - SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- QW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- SS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
- QT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0

NUMBER OF GAGING STATIONS/SITES: 292

NUMBER OF GAGES FUNDED 100% BY COOP PROGRAM: 0

SECTION VII – RESERVOIR DATA SUMMARY

1. SWD MAP
2. INDEX BY BASINS
3. INDEX IN ALPHABETICAL ORDER
4. DATA TABLES



SOUTHWESTERN DIVISION DAM PROJECTS

EXISTING OR UNDER CONSTRUCTION

December 1985

(WITH SECTION 7 FLOOD CONTROL PROJECTS ADDED)

LAKE SUMMARY TABLE INDEX

LAKE NAME	STREAM	DIST	STATE	YR COMP	POOL ELEVATION CONS	POOL ELEVATION FC	CAPACITY** 1000 AF CONS	CAPACITY** 1000 AF FC	PAGE NO
			WHITE RIVER BASIN						
BEAVER	WHITE	LRD	AR	66	1120.00	1130.00	1652	300	1
TABLE ROCK	WHITE	LRD	AR/MO	58	915.00	931.00	2702	760	1
BULL SHOALS	WHITE	LRD	AR/MO	52	654.00	695.00	3048	2360	2
NORFORK	NORTH FORK	LRD	AR/MO	45	552.00	580.00	1251	732	2
CLEARWATER	BLACK	LRD	MO	48	494.00	567.00	22	391	3
GREERS FERRY	LITTLE RED	LRD	AR	62	462.00	487.00	1119	934	3
			ARKANSAS RIVER BASIN						
PUEBLO	ARKANSAS	AD*	CO	74	4880.60	4898.70	264	93	4
TRINIDAD	PURGATORIE R	AD	CO	78	6226.40	6260.00	64	58	4
JOHN MARTIN	ARKANSAS	AD	CO	51	3851.00	3870.00	351	270	5
CHENEY	N F NINNESCAH	TD*	KS	64	1421.60	1429.00	167	81	5
ELDORADO	WALNUT	TD	KS	80	1339.00	1347.50	157	79	6
KAW	ARKANSAS	TD	OK/KS	76	1010.00	1044.50	429	919	6
GREAT SALT PLAINS	SALT FORK ARK	TD	OK	41	1125.00	1138.50	31	240	7
KEYSTONE	ARKANSAS	TD	OK	64	723.00	754.00	618	1219	7
HEYBURN	POLECAT CR	TD	OK	50	761.50	784.00	7	48	8
TORONTO	VERDIGRIS R	TD	KS	60	901.50	931.00	22	178	8
FALL RIVER	FALL	TD	KS	49	948.50	987.50	24	235	9
ELK CITY	ELK	TD	KS	66	792.00	825.00	34	256	9
BIG HILL	BIG HILL CR	TD	KS	81	858.00	867.50	27	13	10
OOLOGAH	VERDIGRIS R	TD	OK	63	638.00	661.00	553	966	10
HULAH	CANEY	TD	OK/KS	51	733.00	765.00	36	258	11
COPAN	L CANEY	TD	OK/KS	80	710.00	732.00	43	184	11
BIRCH	BRICH CREEK	TD	OK	79	750.50	774.00	19	39	12
SKIATOOK	HOMINY CREEK	TD	OK	82	714.00	729.00	305	182	12
NEWT GRAHAM LD 18	VERDIGRIS	TD	OK	70	532.00	.00	24	0	13
CHOUTEAU LD 17	VERDIGRIS	TD	OK	70	511.00	.00	23	0	13
COUNCIL GROVE	NEOSHO R	TD	KS	65	1270.00	1289.00	38	76	14
MARION	COTTONWOOD R	TD	KS	68	1350.50	1358.50	86	60	14
JOHN REDMOND	NEOSHO R	TD	KS	64	1039.00	1068.00	82	563	15
PENSACOLA (GRAND LAKE)	NEOSHO (GRAND)	TD*	OK	40	745.00	755.00	1672	525	15
LAKE HUDSON	NEOSHO (GRAND)	TD*	OK	64	619.00	636.00	200	244	16
FORT GIBSON	NEOSHO (GRAND)	TD	OK	52	544.00	582.00	365	919	16
WEBBERS FALLS LD 16	ARKANSAS	TD	OK	70	490.00	.00	165	0	17
TENKILLER FERRY	ILLINOIS R	TD	OK	52	632.00	667.00	654	577	17
CONCHAS	CANADIAN R	AD	NM	39	4201.00	4218.00	330	198	18
SANFORD (MEREDITH)	CANADIAN R	TD*	TX	65	2941.30	2965.00	945	463	18
NORMAN (THUNDERBIRD)	LITTLE R	TD*	TX	65	1039.00	1049.40	120	77	19
OPTIMA	N CANADIAN R	TD	OK	78	2763.50	2779.00	129	101	19
FORT SUPPLY	WOLF CR	TD	OK	42	2004.00	2028.00	14	87	20
CANTON	N CANADIAN R	TD	OK	48	1615.20	1638.00	116	268	20
ARCADIA	ARKANSAS	TD	OK	86	1006.00	1029.50	28	65	21
EUFAULA	CANADIAN R	TD	OK	64	585.00	597.00	2329	1470	21
R S KERR LD 15	ARKANSAS	TD	OK	70	460.00	.00	494	0	22

LAKE SUMMARY TABLE INDEX

LAKE NAME	STREAM	DIST	STATE	YR COMP	POOL ELEVATION CONS	POOL ELEVATION FC	CAPACITY** 1000 AF CONS	CAPACITY** 1000 AF FC	PAGE NO
W D MAYO LD 14	ARKANSAS	TD	OK	70	413.00	.00	16	0	22
WISTER	POTEAU R	TD	OK	49	471.60	502.50	27	400	23
LD 13	ARKANSAS	LRD	AR/OK	69	392.00	.00	54	0	24
OZARK-J T LD 12	ARKANSAS	LRD	AR	69	372.00	.00	148	0	24
DARDANELLE LD 10	ARKANSAS	LRD	AR	64	338.00	.00	486	0	25
BLUE MOUNTAIN	PETIT JEAN	LRD	AR	47	384.00	419.00	25	233	25
LD 9	ARKANSAS	LRD	AR	69	287.00	.00	65	0	26
TOAD SUCK FERRY LD 8	ARKANSAS	LRD	AR	69	265.00	.00	35	0	26
NIMROD	FOURCHE LA FAVE	LRD	AR	42	342.00	373.00	29	307	27
MURRAY LD 7	ARKANSAS	LRD	AR	69	249.00	.00	87	0	27
DD TERRY LD 6	ARKANSAS	LRD	AR	68	231.00	.00	50	0	28
LD 5	ARKANSAS	LRD	AR	68	213.00	.00	65	0	28
LD 4	ARKANSAS	LRD	AR	68	196.00	.00	70	0	29
LD 3	ARKANSAS	LRD	AR	68	182.00	.00	46	0	29
LD 2	ARKANSAS	LRD	AR	67	162.00	.00	110	0	30
LD 1	ARKANSAS	LRD	AR	67	142.00	.00	2	0	30
			RED RIVER BASIN						
ALTUS	N F RED	TD*	OK	46	1559.00	1562.00	141	21	31
MOUNTAIN PARK (TOM STD.)	W OTTER CREEK	TD*	OK	75	1411.00	1414.00	96	20	32
LAKE KEMP	WICHITA R	TD*	TX	77	1144.00	1156.00	299	225	32
WAURIKA	BEAVER CREEK	TD	OK	78	951.40	962.50	203	140	33
FOSS	WASHITA	TD*	OK	61	1562.00	1668.60	256	181	33
FORT COBB	COBB CREEK	TD*	OK	59	1342.00	1354.80	78	64	34
ARBUCKLE	ROCK CREEK	TD*	OK	67	872.00	885.30	72	36	34
LAKE TEXOMA	RED	TD	TX/OK	45	617.30	640.00	2836	2660	35
PAT MAYSE	SANDERS CREEK	TD	TX	68	451.00	460.50	124	65	35
SARDIS	JACK FORK CREEK	TD	OK	84	599.00	607.00	302	128	36
HUGO	KIAMICHI R	TD	OK	74	404.50	437.50	157	809	36
PINE CREEK	LITTLE R	TD	OK	69	443.50	480.00	78	388	37
BROKEN BOW	MOUNTAIN FORK	TD	OK	69	599.50	627.50	919	450	37
DEQUEEN	ROLLING FORK	LRD	AR	77	437.00	473.50	35	101	38
GILLHAM	COSSATOT	LRD	AR	76	502.00	569.00	33	189	38
DIERKS	SALINE R	LRD	AR	76	526.00	557.50	30	67	39
MILLWOOD	LITTLE R	LRD	AR	66	259.20	287.00	207	1653	39
WRIGHT PATMAN	SULPHER RIVR	FWD	TX	56	220.00	259.50	143	2509	40
LAKE O THE PINES	CYPRESS CREEK	FWD	TX	60	228.50	249.50	251	580	40
			NECHES RIVER BASIN						
SAM RAYBURN	ANGELINA R	FWD	TX	65	164.40	173.00	2898	1009	41
B A STEINHAGEN	NECHES R	FWD	TX	51	81.00	83.00	70	24	41
			TRINITY RIVER BASIN						
BENBROOK	CLEAR FORK	FWD	TX	52	694.00	724.00	88	170	42
LEWISVILLE	ELM FORK	FWD	TX	54	515.00	532.00	465	525	42
GRAPEVINE	DENTON CR	FWD	TX	52	535.00	560.00	189	248	43

LAKE SUMMARY TABLE INDEX

LAKE NAME	STREAM	DIST	STATE	YR COMP	POOL ELEVATION CONS	POOL ELEVATION FC	CAPACITY## 1000 AF CONS	CAPACITY## 1000 AF FC	PAGE NO
LAVON	EAST FORK	FWD	TX	77	492.00	503.50	457	277	43
NAVARRO MILLS	RICHLAND CR	FWD	TX	68	424.50	443.00	63	149	44
BARDWELL	WAXAHACHIE CR	FWD	TX	65	421.00	439.00	55	85	44
SAN JACINTO RIVER BASIN									
BARKER	BUFFALO BAYOU	GD	TX	45	.00	107.00	0	207	45
ADDICKS	BUFFALO BAYOU	GD	TX	48	.00	114.00	0	205	45
BRAZOS RIVER BASIN									
WHITNEY	BRAZOS	FWD	TX	51	533.00	571.00	627	1372	46
AQUILLA	AQUILLA	FWD	TX	83	537.50	556.00	34	87	46
WACO	BOSQUE	FWD	TX	65	455.00	500.00	153	574	47
PROCTOR	LEON R	FWD	TX	63	1162.00	1197.00	59	315	47
BELTON	LEON R	FWD	TX	54	594.00	631.00	458	640	48
STILLHOUSE H	LAMPASAS R	FWD	TX	68	622.00	666.00	236	395	48
GEORGETOWN	N F SAN GABRIEL	FWD	TX	79	791.00	834.00	37	93	49
GRANGER	SAN GRBRIEL	FWD	TX	79	504.00	524.00	66	179	49
SOMERVILLE	YEGUA CR	FW	TX	67	238.00	258.00	160	347	50
COLORADO RIVER BASIN									
TWIN BUTTES	S&M CONCHO R	FWD*	TX	63	1940.20	1969.10	186	454	51
O C FISHER	N CONCHO R	FWD	TX	52	1908.00	1938.50	119	277	52
HORDS CR	HORDS CR	FWD	TX	48	1900.00	1920.00	9	17	52
MARSHALL FORD	COLORADO R	FWD*	TX	40	681.00	714.00	1172	780	53
GUADALUPE RIVER BASIN									
CANYON	GUADALUPE R	FWD	TX	64	909.00	943.00	386	355	54
RIO GRANDE BASIN									
PLATORO	CONEJOS R	AD*	CO	51	10027.50	10034.00	54	6	55
ABIQUIU	RIO CHAMA	AD	NM	63	.00	6283.50	0	568	55
COCHITI	RIO GRANDE	AD	NM	75	5321.45	5460.50	47	539	56
GALISTEO	GALISTEO CR	AD	NM	70	.00	5608.00	0	90	56
JEMEZ CANYON	JEMEZ R	AD	NM	53	5160.00	5232.00	2	104	57
SANTA ROSA	PECOS R	AD	NM	80	4776.50	4797.00	267	182	57
SUMNER	PECOS R	AD*	NM	37	4261.00	4282.00	47	86	58
TWO RIVERS	RIO HONDO	AD	NM	63	.00	4032.00	0	168	58

*Section 7 Flood Control Projects
**Includes dead storage, conservation, water supply, power, irrigation, etc.

SUMMARY OF LAKE CONDITIONS FOR WATER YEAR 1985

WHITE RIVER BASIN

BEAVER LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1968 thru 1985	51.2	105.0	117.9	75.7	105.0	193.7	163.2	128.9	85.0	22.6	16.8	25.8	1,090.8
WY 1985	192.4	231.0	333.8	102.2	246.2	334.5	152.4	101.3	63.2	7.9	67.1	2.8	1,834.8
Releases (1,000 AC. FT.)													
Avg 1968 thru 1985	31.3	49.0	79.8	81.6	86.4	93.3	105.4	103.0	86.4	92.0	89.3	57.5	955.0
WY 1985	8.4	13.2	305.0	125.5	124.3	292.4	256.8	141.9	61.8	28.6	36.6	45.4	1,439.9
Basin Rainfall (inches)													
Avg 1968 thru 1985	4.6	4.1	3.4	2.0	2.3	4.4	4.1	4.9	4.2	2.6	3.0	3.8	43.4
WY 1985	11.6	7.7	6.6	2.3	5.0	9.0	4.8	4.9	4.0	1.9	8.3	3.3	69.4
Deviation	+7.0	+3.6	+3.2	+0.3	+2.7	+4.6	+0.7	0.0	-0.2	-0.7	+5.3	-0.5	+26.0
Pool Elevation													
End of Month	1,117.15	1,124.62	1,125.28	1,124.36	1,128.21	1,129.31	1,125.60	1,123.84	1,123.43	1,122.16	1,122.78	1,120.97	
Maximum	1,117.15	1,124.62	1,130.38	1,125.44	1,129.16	1,129.31	1,129.35	1,126.04	1,124.10	1,123.45	1,123.41	1,122.78	
Minimum	1,110.25	1,117.15	1,124.62	1,124.36	1,124.13	1,124.74	1,124.85	1,123.84	1,123.04	1,122.16	1,122.01	1,120.97	
Pool Content EOM (1,000 AC. FT.)	1,573.0	1,706.1	1,805.9	1,778.4	1,895.4	1,929.8	1,815.5	1,762.9	1,750.9	1,713.8	1,731.9	1,679.6	

TABLE ROCK LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1961 thru 1985	105.0	211.9	227.5	209.4	223.4	389.6	406.3	373.1	232.7	147.4	147.0	101.5	2,774.8
WY 1985	297.8	387.3	110.7	430.4	706.4	927.6	615.4	387.5	391.3	80.4	171.2	82.8	4,588.8
Releases (1,000 AC. FT.)													
Avg 1961 thru 1985	109.4	178.6	255.2	242.7	211.8	292.4	326.0	326.6	214.6	211.3	168.0	123.4	2,660.0
WY 1985	96.7	207.6	630.9	987.9	246.7	909.8	894.3	340.9	337.1	173.5	134.1	179.4	5,138.9
Intervening Basin Rainfall (inches)													
Avg 1961 thru 1985	4.7	4.1	3.5	1.9	1.9	4.2	4.3	4.6	4.7	2.8	3.6	3.8	44.1
WY 1985	8.7	5.3	7.2	2.5	4.4	6.9	4.1	5.4	5.3	1.2	7.5	2.9	61.4
Deviation	+4.0	+1.2	+3.7	+0.6	+2.5	+2.7	-0.2	+0.8	+0.6	-1.6	+3.9	-0.9	+17.3
Pool Elevation													
End of Month	912.69	916.68	926.70	914.42	924.35	924.44	918.08	918.68	919.39	916.70	917.08	914.48	
Maximum	912.69	916.90	927.23	929.49	924.35	924.45	925.62	919.15	922.02	919.40	917.82	917.08	
Minimum	907.44	912.69	914.52	914.42	914.42	917.43	917.40	917.30	918.68	916.70	916.52	914.48	
Pool Content EOM (1,000 AC. FT.)	2,604.0	2,774.9	3,243.0	2,677.1	3,128.0	3,132.3	2,836.6	2,863.6	2,895.6	2,775.8	2,792.5	2,679.6	

WHITE RIVER BASIN

BULL SHOALS LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1953 thru 1985	143.1	259.8	353.5	297.2	325.2	510.4	544.1	574.0	347.2	378.7	200.8	157.9	4,091.9
WY 1985	373.4	513.7	1,275.3	1,235.4	687.3	1,434.6	1,189.3	518.4	520.8	189.4	161.0	200.6	8,299.2
Releases (1,000 AC. FT.)													
Avg 1953 thru 1985	205.0	189.8	258.5	340.7	322.9	349.4	385.1	392.8	316.2	400.6	351.7	248.1	3,760.8
WY 1985	167.4	128.2	346.6	1,295.3	1,254.6	1,272.0	786.7	272.5	318.9	814.1	875.9	484.3	8,016.5
Basin Rainfall (inches)													
Avg 1953 thru 1985	3.8	4.2	3.1	1.8	2.0	3.7	4.3	4.3	3.5	3.2	3.4	3.7	41.0
WY 1985	9.4	5.2	6.7	2.2	4.7	6.6	3.6	4.9	4.9	1.4	5.3	3.2	58.1
Deviation	+5.6	+1.0	+3.6	+0.4	+2.7	+2.9	-0.7	+0.6	+1.4	-1.8	+1.9	-0.5	+17.1
Pool Elevation													
End of Month	656.23	663.87	680.29	679.06	668.85	671.47	678.05	681.61	684.30	673.23	658.97	652.36	
Maximum	656.23	663.87	680.29	685.26	679.06	671.47	678.14	681.61	684.60	684.33	673.23	659.07	
Minimum	651.11	656.23	663.87	679.06	660.82	666.74	671.47	678.05	681.61	673.23	658.97	652.36	
Pool Content EOM (1,000 AC. FT.)	3,149.8	3,521.5	4,436.8	4,362.6	3,780.9	3,923.9	4,302.0	4,518.0	4,686.4	4,022.5	3,279.6	2,974.2	

NORFORK LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1946 thru 1985	52.1	92.1	121.3	121.5	132.0	186.1	198.9	192.8	106.1	75.6	48.6	46.7	1,373.8
WY 1985	244.6	246.7	469.8	269.4	432.9	431.8	329.6	234.2	196.6	73.1	81.0	86.4	3,096.1
Releases (1,000 AC. FT.)													
Avg 1946 thru 1985	65.4	64.5	93.1	129.9	121.7	69.6	136.8	68.2	111.4	122.5	113.4	86.2	1,182.7
WY 1985	19.5	27.8	165.4	482.9	399.4	422.8	323.3	100.2	265.0	248.4	178.3	135.9	2,768.9
Basin Rainfall (inches)													
Avg 1946 thru 1985	3.0	3.7	3.2	2.5	2.7	3.7	4.1	4.9	4.1	3.5	3.0	3.5	41.9
WY 1985	8.3	5.4	6.6	2.8	4.6	6.9	3.9	4.9	6.6	1.1	4.3	4.1	59.5
Deviation	+5.3	+1.7	+3.4	+0.3	+1.9	+3.2	-0.2	0.0	+2.5	-2.4	+1.3	+0.6	+17.6
Pool Elevation													
End of Month	553.77	562.77	573.94	565.90	566.98	567.02	566.88	571.38	568.36	560.90	556.32	553.74	
Maximum	553.77	562.77	573.94	576.68	566.98	567.11	569.24	571.38	572.20	568.36	560.92	556.91	
Minimum	543.36	553.77	562.77	565.90	554.38	560.08	564.51	566.88	568.36	560.90	556.32	553.70	
Pool Content EOM (1,000 AC. FT.)	1,290.5	1,504.0	1,803.3	1,583.9	1,612.0	1,613.0	1,609.4	1,731.0	1,648.8	1,457.7	1,348.7	1,289.8	

WHITE RIVER BASIN

CLEARWATER LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1949 thru 1985	22.3	46.1	61.8	56.3	58.0	91.5	96.0	78.1	39.7	26.8	19.5	21.0	617.1
WY 1985	94.9	196.8	161.4	125.8	171.1	190.3	119.9	99.0	230.5	32.9	63.4	29.8	1,515.8
Releases (1,000 AC. FT.)													
Avg 1949 thru 1985	22.7	32.8	56.1	57.2	60.2	79.9	89.9	78.2	52.1	34.2	28.3	27.8	619.4
WY 1985	31.3	54.8	158.8	186.1	179.7	197.5	155.6	131.6	100.7	82.5	107.1	112.6	1,498.3
Basin Rainfall (inches)													
Avg 1949 thru 1985	2.9	4.0	3.4	2.6	2.7	4.1	4.4	4.7	3.8	3.6	3.5	3.4	43.1
WY 1985	8.8	9.8	6.6	3.3	4.4	7.5	3.4	5.6	10.0	1.5	6.5	2.3	69.7
Deviation	+5.9	+5.8	+3.2	+0.7	+1.7	+3.4	-1.0	+0.9	+6.2	-2.1	+3.0	-1.1	+26.6
Pool Elevation													
End of Month	518.99	545.54	545.85	536.29	534.71	533.24	525.80	517.59	542.70	533.98	524.85	497.75	
Maximum	519.05	545.54	546.34	554.07	536.29	534.71	537.36	528.79	543.75	542.70	533.98	524.85	
Minimum	494.16	518.95	537.25	536.29	510.23	509.59	525.80	517.59	515.92	533.98	524.85	497.75	
Pool Content EOM (1,000 AC. FT.)	87.6	229.3	231.4	170.6	161.5	153.4	116.4	82.4	210.0	157.5	112.0	28.4	

GREERS FERRY LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1965 thru 1985	50.6	110.4	193.3	112.1	134.8	141.4	229.5	175.8	56.2	11.1	7.3	29.0	1,251.5
WY 1985	441.0	377.6	257.6	112.1	219.3	234.0	265.5	476.7	4.7	2.2	0.1	39.4	2,430.2
Releases (1,000 AC. FT.)													
Avg 1965 thru 1985	38.7	42.2	85.4	151.2	133.8	126.3	134.1	135.3	96.6	110.3	97.0	58.2	1,209.1
WY 1985	53.9	21.8	148.8	354.6	324.5	242.8	211.3	119.8	81.7	70.4	103.1	105.5	1,838.2
Basin Rainfall (inches)													
Avg 1964 thru 1985	4.1	4.6	4.7	2.7	2.9	5.0	4.9	5.2	3.7	3.3	3.1	5.1	49.3
WY 1985	14.5	7.8	4.8	2.3	4.3	5.9	6.1	2.8	2.4	1.8	2.3	8.5	63.5
Deviation	+10.4	+3.2	+0.1	-0.4	+1.4	+0.9	+1.2	-2.4	-1.3	-1.5	-0.8	+3.4	+14.2
Pool Elevation													
End of Month	463.64	473.93	476.78	469.88	466.64	466.15	467.44	464.89	462.06	459.34	455.41	452.85	
Maximum	463.64	473.93	476.78	477.67	469.88	466.68	467.44	467.49	464.90	462.06	459.34	455.81	
Minimum	450.94	463.64	473.93	469.88	462.33	462.79	464.21	464.89	462.06	459.34	455.41	452.85	
Pool Content EOM (1,000 AC. FT.)	1,994.5	2,345.5	2,449.9	2,202.9	2,092.8	2,076.1	2,120.0	2,034.9	1,943.9	1,858.5	1,739.3	1,663.6	

PUEBLO RESERVOIR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1894 thru 1985	21.66	22.07	20.96	19.67	16.43	15.70	23.38	67.37	126.92	87.11	56.23	25.84	503.37
FY 1985	36.66	25.93	36.88	34.58	46.44	43.35	63.87	158.62	232.74	149.71	59.22	27.45	915.45
Releases (1000 Ac-Ft)													
Avg 1966 thru 1985	18.60	15.82	12.84	13.09	11.94	12.67	22.86	60.99	118.44	86.16	54.82	24.10	452.36
FY 1985	34.80	15.66	6.44	30.08	47.49	46.94	92.48	149.68	229.66	148.21	58.90	32.68	893.05
Rainfall (Inches)													
Avg 1938 thru 1985	.61	.25	.46	.26	.15	1.18	1.15	1.99	1.24	1.95	2.08	.69	11.99
FY 1985	2.87	.03	.32	.43	.32	.70	1.90	1.27	.48	3.10	1.87	1.36	14.65
Pool Elevation (EOM)	4875.26	4879.60	4885.88	4886.67	4886.43	4885.40	4878.95	4880.43	4880.50	4880.37	4877.76	4876.23	
Maximum	4875.58	4879.60	4885.88	4886.67	4886.94	4886.43	4885.50	4880.57	4882.16	4880.98	4880.52	4877.79	
Minimum	4875.05	4875.24	4879.80	4886.07	4886.40	4885.30	4878.42	4878.85	4880.36	4880.05	4877.76	4876.19	
Pool Content (EOM) (1000 Ac-Ft)	240.88	260.36	290.25	294.14	292.96	287.91	257.47	264.28	264.60	264.00	252.08	245.25	

TRINIDAD LAKE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1977 thru 1985	2.37	1.69	1.42	1.29	1.22	1.56	4.19	10.97	13.15	10.21	8.57	3.74	60.28
FY 1985	3.28	1.92	1.84	1.39	1.39	1.77	4.62	15.92	16.73	9.04	6.49	3.15	67.59
Releases (1000 Ac-Ft)													
Avg 1978 thru 1985	2.02	.53	.31	.24	.27	.24	2.22	9.18	15.06	12.61	9.98	9.95	62.64
FY 1985	1.09	.03	.35	0	.11	.40	2.73	13.52	16.66	11.87	12.92	10.79	70.50
Rainfall (Inches)													
Avg 1978 thru 1985	.91	1.00	.69	.61	.61	1.37	1.42	2.91	2.30	2.43	3.37	1.50	19.49
FY 1985	2.53	.90	.70	1.12	.51	.54	2.16	1.70	.51	4.52	2.46	2.22	19.87
Pool Elevation (EOM)	6185.93	6188.21	6190.02	6191.77	6193.34	6194.70	6196.52	6197.70	6198.14	6194.29	6185.47	6172.87	
Maximum	6185.93	6188.21	6190.02	6191.77	6193.34	6194.99	6196.55	6200.24	6200.04	6197.96	6194.59	6185.52	
Minimum	6182.43	6186.02	6188.28	6190.07	6191.78	6193.40	6194.68	6197.17	6198.14	6192.55	6185.47	6172.87	
Pool Content (EOM) (1000 Ac-Ft)	25.20	26.88	28.27	29.66	30.95	32.09	33.66	35.60	35.09	317.48	248.07	169.35	

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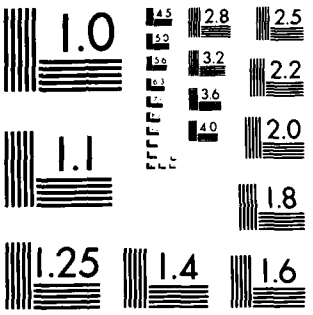


'CROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ARKANSAS RIVER BASIN

JOHN MARTIN RESERVOIR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft													
Avg 1943 thru 1985	8.48	6.26	6.82	8.40	7.60	6.11	13.26	30.47	51.80	33.77	33.51	9.56	231.89
FY 1985	70.87	28.54	15.50	32.45	52.27	21.28	23.96	91.63	96.23	49.35	21.60	7.38	511.10
Release (1000 Ac-Ft)													
Avg 1921 thru 1985	10.86	1.36	.92	.37	.97	.69	22.13	22.79	29.74	36.53	34.18	19.53	180.13
FY 1985	9.26	.40	.10	.09	.12	2.54	48.22	44.04	93.44	59.24	42.60	29.55	329.65
Rainfall (Inches)													
Avg 1943 thru 1985	.73	.40	.23	.23	.22	.60	1.02	2.11	1.44	1.94	1.75	.78	11.48
FY 1985	2.58	0	.28	.29	.12	.09	1.85	3.87	.38	2.92	2.03	.75	15.16
Pool Elevation (EOM)	3836.73	3839.81	3841.36	3844.63	3849.55	3850.83	3848.23	3851.88	3851.52	3850.03	3847.38	3844.72	
Maximum	3836.73	3839.81	3841.36	3844.63	3849.55	3850.83	3851.01	3851.88	3852.40	3851.43	3850.56	3847.27	
Minimum	3828.60	3836.95	3839.86	3841.40	3844.76	3849.62	3848.23	3848.18	3851.52	3848.05	3847.38	3844.72	
Pool Content (EOM) (1000 Ac-Ft)	204.90	231.26	245.35	276.68	328.77	343.32	314.20	355.57	351.36	334.15	305.05	277.57	

ARKANSAS RIVER BASIN

CHENEY RESERVOIR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1938 THRU 1981	11.66	7.53	6.44	6.63	8.27	13.31	14.69	18.68	17.71	9.29	5.22	9.33	128.8
FY 1985	7.62	4.39	14.05	9.29	15.37	11.05	14.47	12.32	21.63	6.63	7.29	17.90	142.0
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	3.78	14.85	2.55	2.51	3.33	9.03	15.21	15.17	13.33	2.49	1.27	2.10	85.6
FY 1985	0.00	0.00	0.00	0.00	5.60	13.81	5.14	12.62	12.67	0.66	0.00	7.01	57.5
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.18	1.30	0.91	0.69	0.93	1.65	2.43	4.03	4.02	3.09	2.95	3.00	27.18
FY 1985	2.96	0.67	2.80	0.15	1.39	0.14	3.26	0.45	5.02	1.57	1.63	4.57	24.61
DEVIATION	0.78	-0.63	1.89	-0.54	0.46	-1.51	0.83	-3.58	1.00	-1.52	-1.32	1.57	-2.57
POOL ELEVATION													
END OF MONTH	1419.57	1419.74	1421.01	1421.76	1422.48	1421.85	1422.29	1421.69	1421.84	1421.43	1421.46	1422.03	
MAXIMUM	1419.57	1419.75	1421.01	1421.76	1422.69	1422.48	1422.29	1422.49	1422.88	1421.84	1421.68	1422.50	
MINIMUM	1419.16	1419.34	1419.70	1421.01	1421.75	1421.62	1421.55	1421.66	1421.63	1421.16	1421.37	1421.15	
POOL CONTENT-EOM (1000AC FT)	148.44	149.93	161.47	168.59	175.61	169.45	173.73	167.93	169.35	165.46	165.74	171.17	

ARKANSAS RIVER BASIN

ELDORADO	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1921 THRU 1978	5.00	4.40	2.80	2.70	2.80	6.20	10.20	11.80	14.40	7.40	3.40	5.50	76.6
FY 1985	3.31	2.84	10.59	4.37	24.27	4.96	7.50	23.36	23.84	3.55	5.32	3.84	117.7
RELEASES(1000AC FT)													
AVG 1983 THRU 1985	0.50	0.62	0.63	0.48	0.38	1.28	13.68	11.06	11.30	1.45	0.76	0.60	42.7
FY 1985	0.43	0.37	0.37	0.37	0.33	3.21	3.34	21.00	17.15	0.68	0.67	0.65	48.6
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.49	1.67	1.14	0.89	0.97	1.96	2.91	4.34	4.84	3.65	3.18	3.80	31.84
FY 1985	3.72	2.26	2.03	0.44	1.59	0.26	1.75	2.95	5.25	1.79	3.53	2.77	28.34
DEVIATION	1.23	0.59	0.89	-0.45	0.62	-1.70	-1.16	-1.39	0.41	-1.86	0.35	-1.03	-3.50
POOL ELEVATION													
END OF MONTH	1333.95	1334.08	1335.50	1335.95	1339.11	1339.06	1339.17	1338.94	1339.31	1338.99	1339.05	1338.84	
MAXIMUM	1334.04	1334.33	1335.50	1335.97	1339.11	1339.19	1339.31	1340.46	1340.08	1339.31	1339.14	1339.05	
MINIMUM	1333.81	1333.95	1334.00	1335.50	1335.95	1339.05	1338.99	1338.94	1338.88	1338.96	1338.93	1338.75	
POOL CONTENT-EOM (1000AC FT)	120.05	120.92	130.70	133.88	157.89	157.48	158.38	156.52	159.52	156.91	157.40	155.74	

ARKANSAS RIVER BASIN

KAW LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1922 THRU 1981	158.53	125.65	84.51	85.12	96.99	171.76	249.25	301.29	342.30	239.71	131.96	141.41	2128.5
FY 1985	46.12	48.69	206.58	142.71	359.14	208.46	149.65	243.07	412.86	84.95	183.47	250.71	2332.4
RELEASES(1000AC FT)													
AVG 1977 THRU 1985	39.72	137.11	68.38	76.02	95.52	239.03	347.17	233.35	336.92	210.16	64.31	100.89	1948.6
FY 1985	17.00	34.29	178.00	210.92	72.84	395.03	169.68	243.95	342.35	173.64	176.88	220.34	2234.9
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.39	1.66	1.13	0.87	1.03	1.88	2.86	4.29	4.44	3.50	3.17	3.58	30.80
FY 1985	3.39	1.24	2.22	0.31	1.77	0.50	1.92	1.93	5.17	1.98	3.09	4.09	27.61
DEVIATION	1.00	-0.42	1.09	-0.56	0.74	-1.38	-0.94	-2.36	0.73	-1.52	-0.08	0.51	-3.19
POOL ELEVATION													
END OF MONTH	1009.72	1010.47	1012.03	1007.50	1021.80	1012.75	1011.26	1010.69	1014.30	1008.70	1008.64	1009.56	
MAXIMUM	1009.91	1010.48	1015.83	1012.78	1021.80	1022.17	1012.75	1014.85	1018.91	1014.30	1009.31	1011.30	
MINIMUM	1007.95	1009.43	1010.45	1007.50	1007.33	1012.75	1009.81	1010.69	1010.11	1008.43	1008.22	1008.35	
POOL CONTENT-EOM (1000AC FT)	423.90	436.73	464.25	387.60	664.72	477.43	450.53	440.54	506.49	406.91	405.93	421.21	

ARKANSAS RIVER BASIN

GREAT SALT PLAINS LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1923 THRU 1981	21.23	15.25	9.13	9.23	13.13	21.07	31.69	54.65	45.26	22.56	21.24	19.10	283.5
FY 1985	3.47	8.03	23.43	13.69	18.21	20.42	21.01	67.25	42.70	19.03	9.11	38.08	284.4
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	3.06	18.54	7.00	6.82	9.35	25.17	31.99	57.49	52.60	21.93	4.08	10.14	248.2
FY 1985	0.54	0.00	14.10	14.23	12.87	20.64	12.08	65.75	29.87	19.11	4.38	23.29	216.9
RAINFALL(INCHES)													
AVG 1930 THRU 1980	1.87	1.19	0.84	0.69	0.91	1.52	2.35	3.71	3.57	2.54	2.89	2.39	24.47
FY 1985	1.88	1.31	2.25	0.15	1.20	0.41	3.04	1.81	3.47	1.37	2.42	3.23	22.54
DEVIATION	0.01	0.12	1.41	-0.54	0.29	-1.11	0.69	-1.90	-0.10	-1.17	-0.47	0.84	-1.93
POOL ELEVATION													
END OF MONTH	1123.58	1124.50	1125.49	1125.34	1125.81	1125.45	1125.96	1125.33	1125.88	1125.13	1125.05	1126.00	
MAXIMUM	1123.76	1124.53	1125.86	1125.54	1125.81	1125.81	1125.96	1127.18	1126.16	1126.00	1125.34	1126.66	
MINIMUM	1123.24	1123.58	1124.50	1125.27	1125.25	1125.27	1125.18	1125.33	1125.26	1125.11	1124.99	1124.72	
POOL CONTENT-EOM													
(1000AC FT)	20.25	27.35	35.97	34.58	38.94	35.60	40.33	34.48	39.59	32.63	31.88	40.70	

ARKANSAS RIVER BASIN

KEYSTONE LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1923 THRU 1981	394.68	288.16	175.45	167.90	194.73	336.81	536.34	752.88	738.79	466.47	283.50	328.51	4664.2
FY 1985	68.23	85.09	454.81	383.40	704.33	741.32	605.95	586.51	722.82	278.88	240.20	354.84	5226.4
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	88.39	205.91	126.11	124.07	147.27	402.18	584.53	683.33	681.23	420.16	176.30	185.04	3824.5
FY 1985	27.81	31.54	254.03	454.92	290.12	1011.98	516.81	764.15	655.64	359.31	214.60	326.03	4906.9
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.38	1.72	1.18	0.97	1.15	1.87	2.87	4.41	4.16	3.14	2.99	3.40	30.24
FY 1985	2.55	1.29	3.13	1.06	3.04	2.57	3.19	1.70	4.79	2.06	2.46	3.61	31.45
DEVIATION	0.17	-0.43	1.95	0.09	1.89	0.70	0.32	-2.71	0.63	-1.08	-0.53	0.21	1.21
POOL ELEVATION													
END OF MONTH	717.41	719.92	728.07	724.91	738.43	730.40	732.87	726.54	728.19	724.44	724.97	725.72	
MAXIMUM	717.45	719.93	728.07	730.24	739.36	739.52	732.87	733.45	731.30	728.27	725.49	726.34	
MINIMUM	714.99	717.41	719.72	724.91	722.81	728.64	725.41	726.54	726.54	723.55	724.03	723.38	
POOL CONTENT-EOM													
(1000AC FT)	439.04	488.86	689.40	604.43	1029.13	758.07	835.89	647.19	692.86	592.68	605.93	625.38	

ARKANSAS RIVER BASIN

HEYBURN LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1929 THRU 1981	2.44	2.65	1.50	1.30	1.92	3.24	6.15	7.82	7.59	2.51	1.53	3.77	42.4
FY 1985	2.43	1.30	32.36	6.66	33.31	20.84	23.88	4.48	23.35	0.83	0.11	0.41	150.0
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	1.85	1.09	2.23	1.99	4.35	4.76	4.47	11.26	6.59	0.42	0.06	0.39	39.5
FY 1985	0.70	1.35	21.03	16.79	25.47	25.22	17.03	12.48	23.36	0.47	0.03	0.00	143.9
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.84	2.27	1.49	1.43	1.54	2.33	3.51	4.95	4.32	3.12	2.98	3.99	34.77
FY 1985	5.31	2.36	7.53	2.85	4.48	4.88	7.96	2.63	7.32	4.09	2.18	4.78	56.37
DEVIATION	2.47	0.09	6.04	1.42	2.94	2.55	4.45	-2.32	3.00	0.97	-0.80	0.79	21.60
POOL ELEVATION													
END OF MONTH	762.07	761.75	770.00	761.88	767.84	764.15	769.03	762.06	761.71	761.56	761.08	761.09	
MAXIMUM	762.65	762.15	770.00	771.14	776.21	767.84	769.46	769.03	771.80	761.72	761.58	761.09	
MINIMUM	760.19	761.59	761.61	761.77	761.73	762.26	761.86	761.70	761.71	761.07	761.08	760.72	
POOL CONTENT-EOM (1000AC FT)	7.62	7.33	17.82	7.45	14.52	9.77	16.28	7.61	7.30	7.17	6.75	6.75	

ARKANSAS RIVER BASIN

TORONTO LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1922 THRU 1981	19.64	18.97	11.46	12.33	13.35	32.04	46.42	40.55	52.97	34.79	9.13	23.24	314.9
FY 1985	3.16	0.59	18.12	21.36	106.70	31.68	24.20	43.90	133.19	4.50	103.92	16.66	508.0
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	4.23	15.64	8.52	6.46	21.13	39.53	51.43	32.19	63.84	19.52	11.87	10.73	285.1
FY 1985	0.19	0.18	7.25	28.77	33.00	104.07	22.69	32.57	138.05	9.55	68.78	48.12	493.2
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.71	2.05	1.31	1.05	1.05	2.42	3.23	4.63	5.05	3.88	3.36	4.28	35.02
FY 1985	3.97	1.41	3.44	1.24	3.11	1.15	1.97	5.48	7.22	1.67	8.59	3.63	42.88
DEVIATION	1.26	-0.64	2.13	0.19	2.06	-1.27	-1.26	0.85	2.17	-2.21	5.23	-0.65	7.86
POOL ELEVATION													
END OF MONTH	900.80	900.79	904.55	901.88	918.61	901.84	902.09	905.57	904.00	901.73	911.57	903.50	
MAXIMUM	900.80	900.85	904.55	905.32	920.92	918.61	905.44	907.16	916.36	904.00	918.24	911.57	
MINIMUM	899.70	900.61	900.70	901.49	901.79	901.50	901.50	901.54	904.00	901.50	901.67	901.76	
POOL CONTENT-EOM (1000AC FT)	19.21	19.18	29.78	22.04	96.30	21.93	22.61	33.12	28.08	21.64	57.81	26.62	

ARKANSAS RIVER BASIN

FALL RIVER LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC.FT.)													
AVG 1922 THRU 1981	15.23	14.09	8.25	9.31	10.09	23.68	36.26	33.38	37.93	18.32	6.26	15.10	227.9
FY 1985	3.55	0.99	22.50	22.40	77.65	26.35	24.18	42.58	47.60	3.92	22.42	11.69	305.8
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	1.84	7.70	5.39	5.27	14.22	29.25	40.95	32.51	48.33	24.92	5.89	3.74	220.0
FY 1985	0.19	0.18	12.90	31.30	32.30	71.51	23.11	38.04	50.20	3.95	22.74	7.59	294.0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.61	1.76	1.23	0.95	1.04	2.17	3.11	4.45	4.86	3.69	3.10	4.03	33.00
FY 1985	4.72	1.30	3.02	0.99	3.45	0.85	1.83	4.80	5.95	2.13	5.96	3.42	38.42
DEVIATION	2.11	-0.46	1.79	0.04	2.41	-1.32	-1.28	0.35	1.09	-1.56	2.86	-0.61	5.42
POOL ELEVATION													
END OF MONTH	948.52	948.66	952.05	948.65	961.25	948.82	948.87	950.29	949.40	948.90	948.52	949.78	
MAXIMUM	948.69	948.67	952.66	952.53	964.33	961.25	952.48	956.03	953.49	949.40	952.00	949.78	
MINIMUM	947.26	948.38	948.62	948.61	948.60	948.55	948.52	948.54	948.64	948.51	948.47	948.28	
POOL CONTENT-EOM													
(1000AC FT)	21.97	22.30	31.55	22.28	68.18	22.68	22.79	26.45	24.12	22.87	21.97	25.09	

ARKANSAS RIVER BASIN

ELK CITY LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC.FT.)													
AVG 1922 THRU 1981	18.46	17.90	8.53	10.18	9.80	25.74	41.73	40.68	42.54	21.54	5.05	14.88	257.0
FY 1985	6.04	2.16	56.64	28.49	114.02	71.19	22.13	35.51	90.41	3.67	73.03	65.08	568.4
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	1.42	9.40	7.42	11.35	12.89	38.61	34.92	32.50	54.52	55.75	11.67	7.06	277.5
FY 1985	1.20	1.60	25.66	59.03	16.11	159.06	14.39	27.77	91.56	1.67	72.96	41.03	512.0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.81	2.22	1.35	1.23	1.17	2.33	3.45	4.71	5.10	3.63	3.15	4.33	35.48
FY 1985	5.33	0.98	3.75	1.10	3.53	2.95	2.00	5.27	7.80	2.78	6.47	4.13	46.09
DEVIATION	2.52	-1.24	2.40	-0.13	2.36	0.62	-1.45	0.56	2.70	-0.85	3.32	-0.20	10.61
POOL ELEVATION													
END OF MONTH	792.16	792.20	799.26	792.29	809.63	794.15	795.94	797.17	796.25	796.22	796.03	800.31	
MAXIMUM	792.21	792.23	799.26	800.46	810.45	812.14	795.99	799.16	805.26	796.27	805.31	800.93	
MINIMUM	790.82	791.90	792.15	792.18	792.21	792.07	792.06	795.83	795.81	795.82	796.03	795.99	
POOL CONTENT-EOM													
(1000AC FT)	29.59	29.73	60.57	30.05	128.63	37.01	44.50	50.13	45.89	45.76	44.89	66.23	

ARKANSAS RIVER BASIN

BIG HILL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1929 THRU 1978	1.69	1.19	0.75	1.05	0.67	1.69	2.30	3.13	3.60	1.73	0.27	1.33	19.4
FY 1985	1.18	0.54	3.25	0.32	8.62	2.43	1.76	3.70	4.78	0.03	5.48	1.23	33.3
RELEASES(1000AC FT.)													
AVG 1984 THRU 1985	0.48	0.14	0.82	0.80	4.19	4.70	3.34	4.20	2.71	0.01	1.99	0.24	23.6
FY 1985	0.00	0.00	1.35	1.57	7.61	2.71	0.73	3.93	4.46	0.02	3.97	0.48	26.8
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.15	2.50	1.49	1.48	1.33	2.55	3.80	5.19	5.67	3.84	3.33	4.80	39.13
FY 1985	6.02	2.36	3.38	0.87	4.68	3.95	3.85	6.88	6.32	1.71	9.94	6.05	56.01
DEVIATION	2.87	-0.14	1.89	-0.61	3.35	1.40	0.05	1.69	0.65	-2.13	6.61	1.25	16.88
POOL ELEVATION													
END OF MONTH	857.34	857.63	858.90	857.84	858.58	858.25	858.70	858.12	857.88	857.41	858.04	858.36	
MAXIMUM	857.34	857.65	858.90	858.98	861.85	859.19	858.70	859.60	859.71	857.88	860.40	858.41	
MINIMUM	856.47	857.34	857.58	857.84	857.79	857.98	857.81	857.91	857.88	857.41	857.31	857.72	
POOL CONTENT-EOM (1000AC FT)	26.72	27.07	28.65	27.33	28.25	27.84	28.40	27.68	27.38	26.80	27.58	27.98	

ARKANSAS RIVER BASIN

OOLOGAH LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1923 THRU 1981	152.90	138.22	80.40	91.90	84.20	179.83	276.30	289.73	290.68	163.74	51.80	107.14	1906.8
FY 1985	44.98	39.07	290.38	292.46	639.85	773.95	211.34	318.15	712.16	53.85	309.92	202.31	3888.4
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	25.15	86.41	44.21	67.63	95.09	293.83	304.29	216.70	291.50	269.34	60.45	49.15	1803.8
FY 1985	4.61	4.46	87.32	436.27	173.68	1167.56	272.55	316.62	593.00	184.55	266.28	174.91	3681.8
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.14	2.42	1.51	1.45	1.33	2.58	3.70	5.03	5.22	3.61	3.31	4.59	37.89
FY 1985	5.94	1.60	3.91	1.44	5.21	3.89	3.43	5.35	7.74	2.29	5.35	5.33	51.48
DEVIATION	2.80	-0.82	2.40	-0.01	3.88	1.31	-0.27	0.32	2.52	-1.32	2.04	0.74	13.59
POOL ELEVATION													
END OF MONTH	637.05	637.95	644.70	640.41	652.84	642.41	639.89	639.45	642.48	637.54	638.35	638.64	
MAXIMUM	637.05	638.01	644.70	646.86	652.84	653.49	642.87	641.45	648.33	642.48	639.31	639.38	
MINIMUM	635.73	637.04	637.85	640.41	637.24	641.37	638.74	638.79	639.24	637.37	637.38	638.28	
POOL CONTENT-EOM (1000AC FT)	526.11	551.98	771.79	627.20	1101.70	692.38	610.78	597.29	694.73	540.19	563.95	572.67	

ARKANSAS RIVER BASIN

HULAH LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1918 THRU 1981	26.93	22.70	9.62	9.63	9.35	24.64	40.30	45.44	38.01	29.02	12.81	25.62	294.1
FY 1985	77.82	9.84	84.04	38.91	113.94	86.89	61.73	38.03	109.02	2.32	4.31	20.96	647.8
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	10.38	15.17	14.40	6.42	10.24	36.97	44.52	47.44	45.84	28.23	6.24	3.69	269.5
FY 1985	55.20	19.63	73.98	49.99	10.19	151.93	58.52	69.81	53.63	57.31	3.52	13.51	617.2
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.89	2.23	1.98	1.24	1.20	2.22	3.48	4.95	4.67	3.42	3.28	4.17	35.13
FY 1985	7.95	0.71	3.66	1.22	4.01	3.30	1.92	3.62	7.90	1.69	4.23	4.39	44.60
DEVIATION	5.06	-1.52	2.28	-0.02	2.81	1.08	-1.56	-1.33	3.23	-1.73	0.95	0.22	9.47
POOL ELEVATION													
END OF MONTH	736.37	733.52	736.14	733.49	751.00	741.56	741.93	734.72	744.97	733.50	733.07	734.44	
MAXIMUM	741.70	736.37	742.98	738.20	751.01	753.32	741.93	743.41	748.87	744.97	733.81	734.62	
MINIMUM	730.94	732.96	732.98	733.08	732.92	739.89	733.14	732.93	734.00	733.50	733.07	732.89	
POOL CONTENT-EOM (1000AC FT)	44.36	33.03	43.37	32.92	137.23	69.80	71.87	37.59	90.77	32.96	31.37	36.50	

ARKANSAS RIVER BASIN

COPAN	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1936 THRU 1977	13.68	13.22	6.94	8.51	7.76	20.51	30.72	34.78	28.28	17.26	4.40	11.59	197.7
FY 1985	16.57	5.26	62.82	24.17	97.15	74.50	40.61	56.47	90.82	6.22	6.90	28.76	510.2
RELEASES(1000AC FT)													
AVG 1984 THRU 1985	15.48	4.74	27.16	17.30	7.35	93.18	90.57	50.73	47.04	22.86	2.40	10.90	389.7
FY 1985	6.25	6.57	51.77	33.29	8.55	113.71	67.79	66.21	52.39	44.92	4.28	21.32	477.1
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.04	2.28	1.39	1.33	1.23	2.41	3.51	4.83	4.96	3.44	3.14	3.90	35.46
FY 1985	6.72	0.99	3.79	1.52	4.71	4.26	2.53	4.06	7.23	1.23	3.36	5.29	45.69
DEVIATION	3.68	-1.29	2.40	0.19	3.48	1.85	-0.98	-0.77	2.27	-2.21	0.22	1.39	10.23
POOL ELEVATION													
END OF MONTH	710.40	710.00	712.04	710.21	723.37	718.07	713.40	711.24	717.14	709.97	710.01	711.20	
MAXIMUM	711.43	710.40	714.63	712.90	723.37	725.59	718.24	715.70	720.43	717.14	710.58	711.56	
MINIMUM	708.37	709.88	709.98	710.01	709.88	717.14	710.02	710.15	710.94	709.97	709.82	709.84	
POOL CONTENT-EOM (1000AC FT)	45.41	43.39	53.88	44.45	133.26	91.62	61.54	49.69	85.15	43.25	43.44	49.48	

ARKANSAS RIVER BASIN

BIRCH LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1936 THRU 1979	2 40	1 65	1 02	0 96	0 96	3 02	3 18	5 61	3 12	1 78	0 82	1 95	26 5
FY 1985	0 91	0 82	8 33	2 03	17 76	9 04	10 82	2 62	25 57	0 38	0 12	1 07	79 5
RELEASES(1000AC FT)													
AVG 1979 THRU 1985	0 27	0 20	0 90	1 25	1 73	5 07	3 26	7 00	4 76	1 30	0 23	0 21	26 2
FY 1985	0 12	0 12	4 80	5 45	4 40	19 55	5 29	9 25	21 98	4 06	0 12	0 12	75 3
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2 78	2 16	1 43	1 27	1 33	2 43	3 31	5 00	4 52	3 16	3 29	4 25	34 93
FY 1985	4 70	2 65	4 79	2 27	6 53	4 83	7 11	3 09	12 60	0 83	1 13	5 47	56 00
DEVIATION	1 92	0 49	3 36	1 00	5 20	2 40	3 80	-1 91	8 08	-2 33	-2 16	1 22	21 07
POOL ELEVATION													
END OF MONTH	749 48	749 95	753 62	750 68	760 81	752 79	756 80	751 04	754 21	750 52	749 98	750 35	
MAXIMUM	749 48	750 00	753 73	754 07	763 01	760 81	756 80	757 12	762 54	754 21	750 56	750 35	
MINIMUM	748 80	749 48	749 89	750 44	750 53	750 50	750 50	750 54	750 98	750 52	749 98	749 80	
POOL CONTENT-EOM (1000AC FT)	18 04	18 56	22 88	19 39	32 79	21 87	26 99	19 80	23 62	19 21	18 60	19 01	

ARKANSAS RIVER BASIN

SKIATOOK LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1935 THRU 1978	13 47	8 09	3 91	3 61	4 29	12 59	15 35	28 43	16 19	10 64	4 09	12 37	133 0
FY 1985	1 25	1 47	39 78	20 75	84 99	52 65	61 55	17 09	66 60	2 05	0 42	1 95	350 5
RELEASES(1000AC FT) LAKE HAS NOT FILLED													
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2 88	2 21	1 41	1 32	1 36	2 37	3 30	4 83	4 38	3 24	3 25	4 19	34 74
FY 1985	4 73	2 11	4 80	2 03	5 61	5 08	6 39	3 50	8 54	1 53	1 64	4 41	50 37
DEVIATION	1 85	-0 10	3 39	0 71	4 25	2 71	3 09	-1 33	4 16	-1 71	-1 61	0 22	15 63
POOL ELEVATION													
END OF MONTH	629 90	641 40	665 90	655 30	680 27	662 87	675 15	655 24	660 65	655 21	655 06	656 23	
MAXIMUM	629 90	641 40	665 90	670 10	681 70	681 50	675 15	676 53	673 09	660 65	655 24	656 28	
MINIMUM	620 80	629 90	641 40	654 80	653 00	653 76	655 01	654 40	655 16	654 86	655 06	654 94	
POOL CONTENT-EOM (1000AC FT)	0 34	1 77	29 72	9 45	80 61	22 54	58 99	9 38	17 98	9 34	9 15	10 67	

NEWT GRAHAM LOCK AND DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1923 THRU 1957	306 03	159 47	104 65	137 73	123 85	203 04	501 27	562 13	549 77	233 60	99 67	137 64	3118 9
FY 1985	110 68	99 17	492 79	798 54	665 95	1765 54	644 92	731 50	1154 97	372 16	282 20	230 83	7349 3
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	69 80	165 50	127 67	143 75	226 14	489 62	526 13	530 21	510 81	354 23	92 39	76 59	3312 8
FY 1985	110 09	100 12	488 83	796 38	662 62	1765 92	640 97	754 61	1153 76	369 98	281 42	236 05	7360 7
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 12	2 36	1 54	1 46	1 47	2 53	3 61	4 88	4 73	3 28	3 20	4 32	36 50
FY 1985	6 27	2 05	4 84	2 09	5 67	4 58	4 96	4 04	9 40	1 90	1 88	5 06	52 74
DEVIATION	3 15	-0 31	3 30	0 63	4 21	2 05	1 35	-0 84	4 67	-1 38	-1 32	0 74	16 24
POOL ELEVATION													
END OF MONTH	532 49	532 19	532 25	532 29	529 46	530 94	531 94	531 55	531 39	532 14	532 04	531 69	
MAXIMUM	532 81	532 89	532 92	532 62	540 00	532 63	532 66	532 42	532 30	532 35	532 50	532 38	
MINIMUM	531 93	531 66	531 13	531 25	527 25	527 67	530 83	531 02	530 51	531 06	531 53	529 14	
POOL CONTENT-EOM (1000AC FT)	24 24	23 78	23 88	23 94	19 90	21 96	23 40	22 84	22 61	23 70	23 55	23 04	

CHOUTEAU LOCK AND DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1923 THRU 1957	306 03	159 47	104 65	137 73	123 85	203 31	501 22	562 13	549 77	233 60	99 67	137 64	3119 1
FY 1985	111 07	102 35	523 04	837 32	675 27	1742 88	656 33	758 08	1183 83	353 45	280 96	210 25	7434 8
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	68 41	161 45	123 09	138 44	224 49	482 90	536 28	527 53	520 75	340 16	86 54	67 07	3277 1
FY 1985	109 72	101 44	521 69	836 55	678 36	1742 81	655 32	757 55	1181 09	351 13	279 24	201 57	7416 6
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 40	2 83	2 00	1 90	1 99	2 91	4 15	5 22	5 06	3 06	2 93	4 16	39 61
FY 1985	6 89	2 96	8 03	2 44	3 12	6 29	5 34	5 64	8 34	2 41	2 53	3 25	57 24
DEVIATION	3 49	0 13	6 03	0 54	1 13	3 38	1 19	0 42	3 28	-0 65	-0 40	-0 91	17 63
POOL ELEVATION													
END OF MONTH	511 33	511 31	511 51	511 32	511 40	511 14	511 33	511 25	511 35	511 49	511 25	511 49	
MAXIMUM	511 57	511 55	511 68	512 16	515 23	511 58	511 55	511 51	511 73	511 57	511 54	511 55	
MINIMUM	511 12	511 17	510 96	511 18	510 85	511 03	511 04	510 98	511 02	511 17	511 16	511 13	
POOL CONTENT-EOM (1000AC FT)	23 32	23 27	23 73	23 30	23 48	22 89	23 32	23 14	23 36	23 68	23 14	23 68	

COUNCIL GROVE LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1922 THRU 1981	5.97	4.43	2.97	2.79	3.75	7.35	10.32	12.52	16.44	12.31	5.02	7.52	91.4
FY 1985	0.17	0.27	2.46	1.38	19.85	15.44	6.99	19.33	31.54	1.57	12.39	32.31	143.7
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	0.67	2.83	3.43	0.81	3.63	9.49	11.60	12.30	16.98	13.87	2.07	2.57	80.2
FY 1985	0.55	0.24	0.25	0.25	1.34	23.93	5.26	17.54	32.09	0.82	10.95	16.32	109.5
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.59	1.63	1.19	0.86	0.91	1.99	3.10	4.60	4.92	3.83	3.54	3.86	33.02
FY 1985	3.24	0.79	2.08	0.75	1.50	1.90	2.13	5.05	5.84	1.39	6.01	4.82	35.50
DEVIATION	0.65	-0.84	0.89	-0.11	0.59	-0.09	-0.97	0.45	0.92	-2.44	2.47	0.96	2.48
POOL ELEVATION													
END OF MONTH	1270.63	1270.42	1271.11	1271.38	1276.88	1274.16	1274.48	1274.56	1274.05	1273.83	1273.94	1278.25	
MAXIMUM	1271.01	1270.65	1271.11	1271.39	1277.04	1276.88	1274.64	1276.17	1278.16	1274.10	1276.28	1278.25	
MINIMUM	1270.52	1270.41	1270.34	1271.10	1271.38	1273.97	1273.93	1274.05	1273.83	1273.82	1273.78	1273.78	
POOL CONTENT-EOM													
(1000AC.FT)	38.14	37.53	39.54	40.35	58.40	49.03	50.09	50.36	48.67	47.96	48.31	63.49	

MARION LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC.FT.)													
AVG 1938 THRU 1971	3.16	1.28	1.49	1.94	2.08	3.31	5.91	8.70	10.17	7.13	1.78	4.79	51.7
FY 1985	1.64	0.68	2.74	1.71	7.99	3.34	24.70	15.34	19.38	1.53	24.59	21.41	125.1
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	0.48	3.44	1.57	0.68	2.30	4.32	8.91	9.56	7.66	8.26	2.54	1.67	51.4
FY 1985	0.37	0.12	0.12	0.12	0.11	0.12	4.96	27.27	16.14	0.79	18.66	11.52	80.3
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.50	1.57	1.07	0.80	0.96	1.88	2.75	4.45	4.68	3.82	3.26	3.73	31.47
FY 1985	3.46	0.75	2.83	0.50	1.53	1.16	7.81	2.18	5.65	1.49	7.60	5.94	40.90
DEVIATION	0.96	-0.82	1.76	-0.30	0.57	-0.72	5.06	-2.27	0.97	-2.33	4.34	2.21	9.43
POOL ELEVATION													
END OF MONTH	1348.2	1348.14	1348.45	1348.59	1349.76	1350.09	1352.80	1350.51	1350.47	1350.00	1350.57	1351.83	
MAXIMUM	1348.32	1348.28	1348.45	1348.60	1349.76	1350.10	1352.92	1352.80	1352.36	1350.47	1352.93	1352.36	
MINIMUM	1348.23	1348.14	1348.08	1348.45	1348.59	1349.76	1350.07	1350.31	1350.46	1349.96	1349.95	1350.31	
POOL CONTENT-EOM													
(1000AC FT)	70.55	69.88	71.63	72.41	79.22	81.20	98.78	83.81	83.56	80.64	84.18	92.23	

ARKANSAS RIVER BASIN

JOHN REDMOND DAM AND RES	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1922 THRU 1981	71 02	55 44	38 04	36 84	40 33	87 60	126 29	136 01	165 24	118 01	39 59	70 27	984 7
FY 1985	10 93	31 43	77 28	53 47	250 13	108 54	87 05	203 53	506 61	39 36	242 64	174 47	1785 4
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	9 85	45 63	31 45	21 85	49 96	112 52	164 49	157 90	196 44	141 08	35 16	42 49	1008 8
FY 1985	1 84	9 90	37 65	73 00	35 42	309 25	77 90	198 61	416 93	116 95	155 52	224 49	1657 5
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2 63	1 69	1 18	0 90	0 96	2 06	2 99	4 44	4 89	3 82	3 40	4 04	33 00
FY 1985	3 01	2 36	1 89	0 86	1 40	1 01	2 38	4 50	6 41	1 51	6 52	4 34	36 19
DEVIATION	0 38	0 67	0 71	-0 04	0 44	-1 05	-0 61	0 06	1 52	-2 31	3 12	0 30	3 19
POOL ELEVATION													
END OF MONTH	1034 14	1036 93	1041 12	1039 01	1054 23	1039 46	1039 97	1040 27	1046 45	1039 11	1046 46	1042 05	
MAXIMUM	1034 14	1037 08	1041 12	1041 15	1054 83	1054 23	1040 29	1040 99	1056 57	1046 45	1050 93	1046 46	
MINIMUM	1032 71	1034 14	1036 93	1038 92	1039 00	1038 88	1039 38	1038 97	1040 25	1038 96	1038 95	1038 88	
POOL CONTENT-EOM													
(1000AC FT)	33 86	53 63	92 02	71 38	284 34	75 62	80 44	83 43	156 50	72 32	156 64	101 94	

ARKANSAS RIVER BASIN

PENSACOLA LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1923 THRU 1981	322 60	323 22	236 46	249 34	281 52	462 47	648 79	692 47	729 00	403 86	171 64	260 79	4782 2
FY 1985	287 01	299 70	763 24	824 33	1811 50	1424 92	657 32	849 92	1370 18	262 41	702 54	330 05	9583 1
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	132 76	220 06	239 96	229 73	322 47	596 34	709 08	532 55	572 10	516 10	237 67	190 57	4499 4
FY 1985	226 49	276 26	505 50	1109 14	1275 46	1596 65	878 93	858 24	1231 55	421 65	482 89	544 88	9407 6
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 39	2 71	1 89	1 73	1 73	2 91	4 02	5 15	5 26	3 58	3 39	4 64	40 40
FY 1985	6 49	2 21	3 60	1 87	4 86	3 93	2 94	5 19	5 97	1 47	6 68	2 71	47 92
DEVIATION	3 10	-0 50	1 71	0 14	3 13	1 02	-1 08	0 04	0 71	-2 11	3 29	-1 93	7 52
POOL ELEVATION													
END OF MONTH	742 52	742 71	748 00	742 19	752 89	749 47	744 60	744 02	746 60	742 63	746 87	741 73	
MAXIMUM	743 04	742 88	748 00	750 99	753 29	752 98	749 72	747 58	748 06	746 60	747 93	746 94	
MINIMUM	741 37	742 09	742 31	742 19	742 18	745 12	743 27	743 78	743 46	742 63	741 83	741 43	
POOL CONTENT-EOM													
(1000AC FT)	1559 88	1568 24	1816 00	1545 36	2073 84	1889 97	1653 60	1626 92	1747 80	1564 72	1760 76	1525 39	

ARKANSAS RIVER BASIN

LAKE HUDSON	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1923 THRU 1981	366.07	326.50	276.23	277.65	316.68	493.77	703.76	798.60	797.85	469.55	232.23	292.51	5351.4
FY 1985	254.48	325.09	767.21	1328.73	1519.34	1789.49	1006.02	1012.17	1493.35	431.60	493.49	600.79	11021.7
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	144.67	253.70	286.31	274.41	376.51	698.41	874.70	634.09	713.10	548.79	242.03	199.86	5246.6
FY 1985	250.33	336.85	732.83	1385.42	1348.54	1896.64	1054.32	1035.75	1470.03	447.33	490.27	597.74	11046.1
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.78	3.02	2.17	1.94	2.08	3.16	4.26	5.47	5.21	3.23	3.42	4.66	42.40
FY 1985	6.58	3.02	7.30	2.23	4.98	5.33	3.77	4.53	6.27	1.48	4.35	3.41	53.25
DEVIATION	2.80	0.00	5.13	0.29	2.90	2.17	-0.49	-0.94	1.06	-1.75	0.93	-1.25	10.85
POOL ELEVATION													
END OF MONTH	620.31	619.08	621.80	619.80	632.27	624.87	620.65	619.94	621.52	619.65	619.43	619.26	
MAXIMUM	620.49	621.43	621.90	629.57	633.18	632.27	625.76	621.83	625.27	621.82	620.60	620.23	
MINIMUM	618.89	618.93	619.08	619.02	619.41	619.78	618.93	618.84	619.54	618.81	618.66	618.90	
POOL CONTENT-EOM (1000AC FT)	214.88	201.18	232.14	209.14	378.79	270.29	218.75	210.69	228.85	207.48	205.05	203.17	

ARKANSAS RIVER BASIN

FORT GIBSON LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC.FT.)													
AVG 1923 THRU 1980	392.66	377.51	305.41	312.54	355.69	546.77	797.48	887.79	630.74	507.86	248.96	323.89	5937.3
FY 1985	288.20	361.59	952.26	1410.84	1565.16	2122.11	1159.74	1106.78	1591.73	437.95	503.01	595.24	12094.6
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	151.95	274.39	306.54	300.53	332.46	787.57	952.86	692.88	723.35	602.57	240.18	197.90	5563.2
FY 1985	237.48	386.40	805.08	1553.40	776.61	2676.89	1363.30	1122.31	1547.64	464.17	468.60	604.25	12006.1
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.63	2.96	2.16	1.97	2.13	3.14	4.26	5.40	5.12	3.05	3.21	4.39	41.42
FY 1985	5.91	2.77	7.29	2.05	4.50	5.55	4.64	3.76	7.47	1.52	3.16	5.30	53.92
DEVIATION	2.28	-0.19	5.13	0.08	2.37	2.41	0.38	-1.64	2.35	-1.53	-0.05	0.91	12.50
POOL ELEVATION													
END OF MONTH	555.82	554.33	560.98	555.06	579.70	565.06	556.39	555.20	556.86	555.05	556.20	555.42	
MAXIMUM	556.27	556.31	560.98	569.29	580.45	579.70	565.18	559.42	562.05	556.86	556.20	556.20	
MINIMUM	553.54	553.48	554.00	554.00	552.71	558.23	553.45	555.20	554.57	553.88	554.02	554.05	
POOL CONTENT-EOM (1000AC FT)	400.90	371.57	516.12	385.70	1171.51	623.83	412.65	388.50	422.47	385.50	408.68	392.90	

ARKANSAS RIVER BASIN

WEBBERS FALLS L&D	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1940 THRU 1981	1163 75	1067 84	732 82	668 85	751 95	1291 80	1905 47	2350 06	1996 12	1593 36	687 71	627 23	14837 0
FY 1985	394 51	542 28	1787 90	3071 40	1996 16	6651 37	2722 31	2765 55	4116 50	1244 43	969 12	1053 02	27314 6
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	341 88	714 29	606 83	628 28	785 15	1898 07	2336 92	2151 92	2212 01	1438 99	511 42	462 68	14088 5
FY 1985	384 01	554 58	1771 74	3138 51	1989 98	6652 52	2706 96	2763 16	4118 34	1251 71	957 96	1048 08	27337 5
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 41	2 83	2 08	1 91	2 12	2 97	4 26	5 28	5 09	3 01	2 94	4 21	40 11
FY 1985	5 99	3 18	6 61	1 77	3 66	5 91	5 12	3 47	6 88	1 78	2 31	4 00	50 68
DEVIATION	2 58	0 35	4 53	-0 14	1 54	2 94	0 86	-1 81	1 79	-1 23	-0 63	-0 21	10 57
POOL ELEVATION													
END OF MONTH	490 29	489 00	490 25	489 33	489 76	489 37	490 30	490 09	489 37	489 83	490 21	490 20	
MAXIMUM	490 29	490 38	490 45	490 35	490 26	490 35	490 75	490 32	490 30	490 61	490 56	490 51	
MINIMUM	488 20	487 55	487 31	488 03	487 29	488 56	487 41	487 83	489 28	488 01	489 21	487 30	
POOL CONTENT-EOM (1000AC FT)	173 62	158 74	173 14	162 49	167 38	162 94	173 74	171 20	162 94	168 17	172 65	172 53	

ARKANSAS RIVER BASIN

TENKILLER LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1923 THRU 1981	52 66	73 08	76 11	82 05	97 10	136 73	174 34	188 34	119 59	53 49	40 27	35 47	1129 2
FY 1985	140 83	152 93	351 87	207 07	210 45	282 84	171 37	133 09	144 79	24 99	35 01	19 24	1874 5
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	28 23	31 08	62 38	70 01	45 91	85 82	131 30	101 22	75 26	57 22	47 78	26 66	762 9
FY 1985	16 28	139 50	262 36	310 10	84 44	277 72	287 85	159 88	104 07	56 32	21 09	16 40	1736 0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 62	3 17	2 58	2 22	2 66	3 52	4 59	5 65	4 89	3 15	3 29	4 32	43 66
FY 1985	7 57	4 06	6 32	1 63	2 98	5 29	3 56	3 52	4 39	1 50	5 91	3 05	49 78
DEVIATION	3 95	0 89	3 74	-0 59	0 32	1 77	-1 03	-2 13	-0 50	-1 65	2 62	-1 27	6 12
POOL ELEVATION													
END OF MONTH	633 82	634 67	640 97	633 93	642 77	642 89	634 31	631 91	634 57	631 68	632 27	632 08	
MAXIMUM	633 88	635 75	643 75	644 98	642 77	645 08	644 47	636 49	636 74	634 60	632 43	632 28	
MINIMUM	623 85	633 52	632 53	633 93	632 67	637 24	633 44	631 91	631 85	631 68	631 60	631 68	
POOL CONTENT-EOM (1000AC FT)	677 94	689 08	776 76	679 38	803 22	804 98	684 36	652 92	687 77	649 91	657 64	655 15	

CORCHAS LAKE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1940 thru 1985	9.74	3.51	3.56	3.70	3.79	3.71	15.14	28.90	23.88	24.47	28.41	21.45	170.28
FY 1985	6.09	4.70	4.56	5.99	4.44	14.92	22.72	61.72	31.81	6.21	12.26	6.98	182.45
Releases (1000 Ac-Ft)													
Avg 1941 thru 1985	8.41	1.97	1.71	.68	.94	1.73	13.72	17.50	15.96	17.77	18.47	20.67	119.55
FY 1985	5.65	0	0	0	0	0	8.67	9.77	7.77	18.61	12.61	10.94	74.02
Rainfall (Inches)													
Avg 1940 thru 1985	1.01	.45	.46	.34	.37	.64	.86	1.53	1.57	2.40	2.38	1.28	13.23
FY 1985	3.41	1.50	1.10	.86	.36	2.87	1.67	1.90	2.45	.85	4.25	2.56	23.78
Pool Elevation (EOM)		4184.68	4185.25	4186.01	4186.45	4188.19	4189.70	4195.82	4197.99	4195.95	4195.37	4194.44	
Maximum		4184.68	4185.25	4186.01	4186.45	4188.19	4189.70	4195.82	4198.05	4197.95	4196.03	4195.27	
Minimum		4184.20	4184.69	4185.31	4186.02	4186.45	4188.29	4189.93	4195.93	4195.95	4195.37	4194.42	
Pool Content (EOM) (1000 Ac-Ft)		201.304	204.86	209.70	212.63	224.26	234.94	283.00	301.99	284.11	279.20	271.49	

SANFORD RESERVOIR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1923 THRU 1981	21.36	3.42	1.97	3.18	2.09	2.58	11.47	35.88	38.51	37.66	35.93	30.86	224.9
FY 1985	8.82	3.58	3.71	2.25	3.77	8.80	6.24	8.88	5.74	3.08	3.58	14.76	73.2
RELEASES(1000AC FT.)													
LAKE HAS NOT FILLED													
RAINFALL(INCHES)													
AVG 1930 THRU 1980	1.32	0.60	0.49	0.45	0.48	0.68	1.14	2.52	2.36	2.68	2.48	1.62	16.82
FY 1985	2.66	0.52	0.53	0.53	1.17	1.66	1.63	1.76	1.85	0.46	2.49	4.35	19.61
DEVIATION	1.34	-0.08	0.04	0.08	0.69	0.98	0.49	-0.76	-0.51	-2.22	0.01	2.73	2.79
POOL ELEVATION													
END OF MONTH	2896.67	2896.22	2896.08	2895.66	2895.34	2895.52	2894.97	2894.41	2893.60	2892.01	2890.76	2891.07	
MAXIMUM	2896.76	2896.71	2896.22	2896.08	2895.66	2895.68	2895.52	2894.97	2894.41	2893.60	2892.02	2891.10	
MINIMUM	2896.59	2896.22	2895.94	2895.65	2895.33	2895.16	2894.80	2894.24	2893.60	2892.01	2890.76	2890.06	
POOL CONTENT-EOM (1000AC FT)	324.54	320.39	319.10	315.27	312.37	314.00	309.01	304.01	296.84	283.02	272.44	275.03	

ARKANSAS RIVER BASIN

NORMAN RESERVOIR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1926 THRU 1961	3.80	0.90	1.60	1.10	2.10	4.20	9.50	13.70	12.10	4.40	0.70	2.40	56.5
FY 1985	9.22	3.06	33.83	9.50	52.33	35.38	25.98	5.27	18.95	1.22	1.66	3.27	199.7
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	1.52	3.72	0.72	2.51	0.80	3.93	4.53	4.27	5.06	1.61	0.00	0.00	28.7
FY 1985	0.00	0.00	7.17	25.12	4.99	28.55	33.90	28.88	19.78	4.83	0.00	0.00	153.2
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.89	2.07	1.51	1.32	1.54	2.23	3.48	5.50	4.35	2.90	2.60	3.48	33.87
FY 1985	6.16	2.92	6.98	3.52	6.87	6.01	6.23	1.90	9.41	1.40	2.90	4.02	58.32
DEVIATION	3.27	0.85	5.47	2.20	5.13	3.78	2.75	-3.60	5.06	-1.50	0.30	0.54	24.45
POOL ELEVATION													
END OF MONTH	1037.62	1037.87	1042.00	1039.38	1046.05	1046.57	1045.05	1041.04	1040.22	1038.82	1038.31	1038.21	
MAXIMUM	1037.62	1037.92	1042.00	1042.99	1046.22	1046.61	1046.57	1045.14	1042.32	1040.22	1038.84	1038.31	
MINIMUM	1036.81	1037.53	1037.84	1039.10	1039.04	1044.51	1042.90	1041.04	1040.22	1038.82	1038.31	1037.90	
POOL CONTENT-EOM (1000AC FT)	111.40	112.84	138.80	121.92	168.40	172.56	160.78	132.46	127.13	118.52	115.46	114.86	

ARKANSAS RIVER BASIN

OPTIMA LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1939 THRU 1981	2.10	0.82	0.96	0.89	1.05	1.05	1.57	5.60	6.75	3.77	3.36	3.30	31.2
FY 1985	0.14	0.01	0.03	0.07	0.15	0.25	0.38	0.47	0.20	0.02	0.39	0.69	2.8
RELEASES(1000AC FT.)													
LAKE HAS NOT FILLED													
RAINFALL(INCHES)													
AVG 1930 THRU 1980	1.13	0.59	0.40	0.37	0.42	0.77	1.23	2.64	2.25	2.69	2.41	1.62	16.52
FY 1985	3.46	0.16	0.48	0.32	1.19	0.78	1.68	1.65	1.02	0.46	1.71	2.70	15.61
DEVIATION	2.33	-0.43	0.08	-0.05	0.77	0.01	0.45	-0.99	-1.23	-2.23	-0.70	1.08	-0.91
POOL ELEVATION													
END OF MONTH	2715.10	2714.90	2714.85	2715.00	2715.30	2715.45	2715.75	2716.15	2715.75	2714.55	2714.90	2715.80	
MAXIMUM	2715.20	2715.10	2714.90	2715.00	2715.30	2715.55	2715.75	2716.20	2716.20	2715.75	2715.25	2715.80	
MINIMUM	2715.05	2714.90	2714.80	2714.85	2715.00	2715.30	2715.25	2715.65	2715.75	2714.55	2714.20	2714.65	
POOL CONTENT-EOM (1000AC FT)	1.48	1.39	1.37	1.43	1.57	1.64	1.78	1.97	1.78	1.26	1.39	1.80	

ARKANSAS RIVER BASIN

FORT SUPPLY LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1923 THRU 1981	5.96	3.34	1.83	1.92	3.26	3.01	4.63	12.05	11.42	4.28	3.50	3.59	58.8
FY 1985	0.21	1.18	1.89	1.61	2.70	3.15	3.41	6.45	1.81	0.29	0.38	2.58	25.7
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	0.05	0.56	0.54	1.03	1.66	2.10	2.64	9.66	3.70	0.59	0.31	0.28	23.1
FY 1985	0.00	0.00	0.00	0.27	2.22	3.68	1.86	6.13	0.00	0.00	0.00	0.00	14.2
RAINFALL(INCHES)													
AVG 1930 THRU 1980	1.60	0.94	0.67	0.57	0.80	1.13	1.73	3.66	3.06	2.44	2.45	1.82	20.87
FY 1985	2.06	0.69	1.43	0.22	1.12	1.61	2.07	1.35	3.48	1.06	2.48	2.61	20.18
DEVIATION	0.46	-0.25	0.76	-0.35	0.32	0.48	0.34	-2.31	0.42	-1.38	0.03	0.79	-0.69
POOL ELEVATION													
END OF MONTH	2002.18	2002.63	2003.61	2004.26	2004.49	2004.04	2004.49	2003.78	2004.02	2003.43	2003.01	2003.92	
MAXIMUM	2002.40	2002.66	2003.61	2004.32	2004.49	2004.53	2004.49	2005.49	2004.09	2004.02	2003.43	2003.92	
MINIMUM	2002.18	2002.15	2002.57	2003.61	2004.13	2003.85	2003.94	2003.78	2003.73	2003.43	2003.01	2002.72	
POOL CONTENT-EOM (1000AC FT)	10.73	11.47	13.18	14.39	14.84	13.97	14.84	13.49	13.93	12.86	12.10	13.75	

ARKANSAS RIVER BASIN

CANTON LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1923 THRU 1981	18.09	5.83	3.94	4.22	5.63	8.35	13.59	34.74	36.74	27.60	9.76	11.25	179.7
FY 1985	1.14	0.19	4.41	2.77	6.19	11.82	9.44	17.18	8.97	3.78	3.17	4.33	73.4
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	3.40	3.22	4.28	2.22	0.93	2.94	9.24	4.38	11.85	5.48	6.80	3.93	58.7
FY 1985	0.37	0.36	0.29	0.19	0.18	0.33	0.46	0.50	0.57	0.65	14.71	0.36	19.0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	1.46	0.91	0.60	0.54	0.71	1.13	1.64	3.37	2.80	2.56	2.49	1.79	20.00
FY 1985	2.68	0.83	1.70	0.44	2.24	1.66	2.59	0.89	2.74	1.29	2.40	3.08	22.54
DEVIATION	1.22	-0.08	1.10	-0.10	1.53	0.53	0.95	-2.48	-0.06	-1.27	-0.09	1.29	2.54
POOL ELEVATION													
END OF MONTH	1607.60	1607.29	1607.95	1608.35	1609.25	1610.82	1611.86	1613.62	1614.11	1613.89	1611.83	1611.92	
MAXIMUM	1607.73	1607.64	1607.95	1608.35	1609.25	1610.82	1611.86	1613.64	1614.18	1614.12	1613.94	1611.94	
MINIMUM	1607.50	1607.29	1607.24	1607.95	1608.35	1609.25	1610.82	1611.86	1613.61	1613.76	1611.83	1611.59	
POOL CONTENT-EOM (1000AC FT)	58.72	57.03	60.64	62.94	68.25	78.18	85.17	97.74	101.37	99.72	84.97	85.57	

ARKANSAS RIVER BASIN

ARCADIA LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1938 THRU 1982							3 60	7.60	5.10	2 06	1.03	1.99	
FY 1985							10.10	6.18	13 54	9 59	13 14	13 12	
RELEASES(1000AC. FT)													
	RESERVOIR OPERATED AS DETENTION BASIN ONLY. IMPOUNDMENT SCHEDULED TO BEGIN MARCH 1986.												
RAINFALL(INCHES)													
AVG 1930 THRU 1980							3.22	5 32	4.25	2.77	2.55	2.55	
FY 1985							4.86	2.09	7.57	1.47	3 01	4.44	
DEVIATION							1.64	-3.23	3.32	-1.30	0.46	1.89	
POOL ELEVATION													
END OF MONTH							972.00	957.20	959 40	959.80	959.10	961.90	
MAXIMUM							980.70	972.00	979.10	965.30	966.70	972 50	
MINIMUM							956.00	957.20	957.20	959.00	959.10	959.00	
POOL CONTENT-EOM													
(1000AC. FT.)							0.26	0.01	0.03	0.03	0.03	0.06	

ARKANSAS RIVER BASIN

EUFAULA LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC. FT.)													
AVG 1923 THRU 1981	332.38	246.54	202.92	218.39	262.49	353.60	526.38	766.88	603.75	252.71	144.26	212.12	4122 4
FY 1985	445.68	307.64	875.90	818.38	956.23	2030.48	991.74	801.12	620.03	82.11	65.06	30.74	8025 1
RELEASES(1000AC. FT.)													
AVG 1976 THRU 1985	86.64	191.95	111.24	203.46	163.49	291.35	311 82	498.02	525.64	256.78	162.00	62 28	2864 7
FY 1985	8.75	240.42	449.34	1199.78	331.18	1833.15	1505.19	1036.86	417.30	280.32	27.92	23 04	7353 3
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 15	2.45	1.89	1.64	1.98	2.72	3.85	5.54	4.42	3.03	2.80	3 90	37.37
FY 1985	6 31	2 65	5 39	1.89	3.94	6.08	5.21	2.19	5.86	0.81	1.99	3 22	45.54
DEVIATION	3 16	0.20	3.50	0.25	1.96	3.36	1.36	-3.35	1.44	-2.22	-0.81	-0.68	8.17
POOL ELEVATION													
END OF MONTH	584 92	585 34	588 98	585 72	591 02	592 31	587.72	585.16	586 59	584 08	583 90	583 59	
MAXIMUM	584 92	586 47	588 98	591 26	591 02	592 94	592 46	589 27	587.19	586.83	584 08	583 90	
MINIMUM	580 53	584 92	585 16	585 71	585 12	588 21	585.89	584 91	584 93	584.08	583 89	583 49	
POOL CONTENT-EOM													
(1000AC FT)	2306 27	2351 05	2761.82	2391 83	3008 72	3173 00	2615 05	2331 74	2487 31	2219 08	2200 77	2169 76	

ARKANSAS RIVER BASIN

R S KERR LOCK AND DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1943 THRU 1981	1283 00	1231 74	1064 24	964 67	1176 02	1963 52	2466 04	3141 04	2757 85	2170 09	986 93	1279 80	20484 9
FY 1985	621 42	1183 34	2930 18	5008 26	2672 73	9116 43	5103 27	4400 73	4700 03	1537 59	1022 08	1156 56	39452 6
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	472 63	959 46	839 26	950 38	1046 35	2375 51	2871 49	2907 85	2868 03	1706 30	713 03	537 47	18247 8
FY 1985	622 51	1188 72	2858 39	5138 87	2656 14	9089 59	5092 56	4424 78	4680 89	1525 43	1011 82	1083 60	39373 3
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 60	3 07	2 57	2 13	2 61	3 43	4 54	5 61	4 69	3 16	3 15	4 19	42 75
FY 1985	8 49	4 69	4 53	1 70	4 01	7 01	4 14	2 20	2 99	1 83	4 08	4 18	49 85
DEVIATION	4 89	1 62	1 96	-0 43	1 40	3 58	-0 40	-3 41	-1 70	-1 33	0 93	-0 01	7 10
POOL ELEVATION													
END OF MONTH	459 70	459 40	460 90	459 80	460 10	460 50	460 40	459 45	459 40	459 05	458 80	460 08	
MAXIMUM	460 20	460 53	460 90	461 05	460 90	461 56	460 50	460 46	460 46	460 28	459 80	460 50	
MINIMUM	458 65	459 00	459 29	459 11	459 42	459 09	459 23	459 10	458 55	458 80	458 80	458 78	
POOL CONTENT-EOM													
(1000AC FT)	512 76	499 83	566 30	517 07	530 20	548 25	543 74	501 98	499 83	484 74	474 27	529 30	

ARKANSAS RIVER BASIN

W D MAYO LOCK AND DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1943 THRU 1981	1286 93	1308 95	1072 34	1000 13	1200 22	2018 50	2575 19	3157 14	2710 16	2122 46	974 74	1253 55	20680 3
FY 1985	696 20	1274 58	2832 40	5165 65	2781 42	9135 67	5095 74	4446 74	4697 06	1555 04	1045 88	1115 70	39842 1
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	522 68	990 30	886 86	1000 09	1095 77	2454 84	2880 62	2856 95	2936 99	1745 01	761 96	576 26	18708 3
FY 1985	695 69	1273 94	2832 36	5165 55	2778 41	9133 18	5100 16	4445 89	4696 41	1555 19	1050 73	1115 10	39842 6
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3 39	3 32	2 71	2 24	2 80	3 65	4 46	5 53	4 32	3 16	2 99	4 09	42 66
FY 1985	10 18	5 93	3 21	1 77	4 46	6 82	4 15	1 84	2 44	1 76	3 10	3 11	48 77
DEVIATION	6 79	2 61	0 50	-0 47	1 66	3 17	-0 31	-3 69	-1 88	-1 40	0 11	-0 98	6 11
POOL ELEVATION													
END OF MONTH	412 73	412 89	412 82	412 86	414 48	415 60	412 67	412 79	412 62	412 20	412 66	412 59	
MAXIMUM	413 10	413 07	413 11	414 82	416 66	419 39	415 60	413 12	413 05	413 20	413 13	413 15	
MINIMUM	412 10	411 90	411 89	410 83	410 89	412 17	411 13	411 91	410 94	412 11	411 99	411 96	
POOL CONTENT-EOM													
(1000AC FT)	15 34	15 59	15 48	15 55	18 22	20 22	15 25	15 44	15 16	14 50	15 23	15 12	

ARKANSAS RIVER BASIN

WISTER LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1938 THRU 1981	18.76	50.47	65.96	67.53	93.38	126.43	132.44	134.46	60.21	21.41	9.21	17.46	797.7
FY 1985	477.02	269.16	200.33	73.03	212.23	160.46	176.13	47.11	15.87	2.78	0.73	2.58	1637.4
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	22.66	41.40	92.56	68.10	71.79	119.94	77.63	120.36	90.37	18.40	5.70	3.80	732.7
FY 1985	108.04	326.16	254.93	326.99	85.30	187.66	174.22	144.65	1.32	0.87	0.74	0.61	1611.5
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.43	3.56	3.15	2.71	3.16	4.00	4.65	5.87	4.08	3.55	3.28	4.16	45.60
FY 1985	11.15	6.31	4.02	1.73	3.24	4.69	4.46	2.82	3.05	2.05	2.40	3.12	49.04
DEVIATION	7.72	2.75	0.87	-0.98	0.08	0.69	-0.19	-3.05	-1.03	-1.50	-0.88	-1.04	3.44
POOL ELEVATION													
END OF MONTH	502.63	499.86	496.87	476.36	488.85	486.49	486.30	474.86	476.80	476.55	476.00	475.93	
MAXIMUM	502.90	504.94	499.86	498.01	488.91	489.02	487.14	487.86	476.84	476.80	476.55	476.00	
MINIMUM	478.27	498.11	493.95	476.36	474.84	483.55	474.62	474.68	474.86	476.55	476.00	475.81	
POOL CONTENT-EOM													
(1000AC.FT)	430.95	369.56	309.34	51.30	177.04	146.02	143.65	42.50	54.09	52.51	49.02	48.62	

LOCK AND DAM NO. 13	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1971 thru 1985	1,131.1	2,130.1	1,804.6	1,606.7	1,675.0	3,333.1	3,291.5	3,403.1	3,374.2	1,657.6	740.4	740.8	24,888.2
WY 1985	1,352.1	2,079.4	3,380.2	5,477.2	3,054.0	8,955.4	5,355.4	4,778.1	4,476.4	1,701.5	1,085.8	1,172.8	42,868.3
Project Rainfall (inches)													
Avg 1972 thru 1985	4.0	4.7	2.8	1.7	2.5	4.5	3.1	4.8	3.8	3.2	2.3	3.9	41.3
WY 1985	11.0	8.0	5.0	2.3	5.1	7.0	4.5	2.7	2.4	2.5	3.3	3.7	57.5
Deviation	+7.0	+3.3	+2.2	+0.6	+2.6	+2.5	+1.4	-2.1	-1.4	-0.7	+1.0	-0.2	+16.2
Pool Elevation													
End of Month	391.62	391.81	389.62	391.82	389.60	393.64	389.56	392.32	391.74	391.80	392.22	391.93	
Maximum	392.28	392.15	392.17	392.15	392.72	394.82	393.64	392.32	392.36	392.50	392.55	392.54	
Minimum	389.20	389.65	388.35	388.30	389.60	389.42	388.50	388.78	389.05	391.08	391.36	391.12	
Pool Content EOM (1,000 AC. FT.)	56.6	57.8	44.3	57.9	44.2	71.2	44.0	61.3	57.4	57.8	60.6	58.6	

OZARK-JETA TAYLOR LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1972 thru 1985	1,067.3	2,306.9	2,085.7	1,716.6	1,858.1	3,813.3	3,744.3	3,750.3	3,611.0	1,736.1	778.0	767.8	27,235.4
WY 1985	1,631.3	2,292.4	3,742.2	5,925.8	3,383.4	10,425.7	6,046.4	4,906.2	4,405.8	1,571.0	1,067.2	1,153.5	46,550.9
Project Rainfall (inches)													
Avg 1973 thru 1985	4.1	5.1	3.9	2.1	2.9	4.8	3.3	5.3	4.0	3.3	2.4	3.8	45.0
WY 1985	12.4	7.8	6.4	2.0	6.1	5.8	4.5	5.5	1.9	2.4	3.7	2.7	61.2
Deviation	+8.3	+2.7	+2.5	-0.1	+3.2	+1.0	+1.2	+0.2	-2.1	-0.9	+1.3	-1.1	+16.2
Pool Elevation													
End of Month	371.68	371.52	372.00	372.37	372.10	372.13	371.76	371.70	371.10	371.96	372.19	371.70	
Maximum	372.76	372.70	372.70	372.78	372.78	372.30	372.78	372.55	372.40	372.70	372.63	372.38	
Minimum	370.36	370.70	370.17	371.44	370.38	371.38	371.44	370.42	371.10	370.42	370.92	370.64	
Pool Content EOM (1,000 AC. FT.)	145.3	143.7	148.4	152.7	149.6	149.9	146.1	145.5	139.7	148.0	150.6	145.5	

DARDANELLE LAKE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1966 thru 1985	1,260.3	2,155.1	2,102.0	1,773.9	1,934.2	3,332.5	3,616.2	3,811.1	3,868.6	1,750.5	901.5	844.6	27,350.5
WY 1985	2,159.1	2,779.0	3,965.7	5,609.7	3,298.5	9,204.7	6,019.7	4,951.9	4,408.6	1,561.3	1,017.2	1,061.4	46,036.8
Project Rainfall (inches)													
Avg 1971 thru 1985	4.7	4.9	4.8	2.4	3.1	5.1	4.1	5.8	4.2	2.3	2.8	3.6	47.8
WY 1985	17.9	4.9	4.7	1.7	5.4	5.2	5.6	5.0	0.8	1.3	1.9	2.3	56.7
Deviation	+13.2	0.0	-0.1	-0.7	+2.3	+0.1	+1.5	-0.8	-3.4	-1.0	-0.9	-1.3	+8.9
Pool Elevation													
End of Month	338.15	337.67	338.49	337.28	338.29	338.34	337.91	337.23	337.88	337.78	337.71	338.49	
Maximum	338.52	338.50	338.55	338.55	338.42	338.50	338.48	338.47	338.49	338.28	338.52	338.49	
Minimum	337.41	337.10	337.44	337.28	337.22	337.95	337.83	337.21	332.94	337.39	337.65	337.59	
Pool Content EOM (1,000 AC. FT.)	491.5	475.1	503.4	462.1	496.4	498.2	483.2	460.4	482.2	478.8	476.5	503.4	

BLUE MOUNTAIN LAKE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1948 thru 1985	12.5	23.1	35.2	43.2	45.6	64.4	55.6	56.2	16.0	10.6	5.1	4.9	372.4
WY 1985	240.7	135.0	102.7	42.8	89.8	75.3	74.8	18.3	2.7	0.1	0.3	0.1	782.6
Releases (1,000 AC. FT.)													
Avg 1948 thru 1985	5.9	15.3	34.6	38.7	42.8	50.1	44.7	52.4	36.1	18.0	11.6	6.6	356.8
WY 1985	30.9	111.2	144.8	161.1	104.4	88.1	67.1	56.4	4.4	0.7	1.5	1.2	771.8
Basin Rainfall (inches)													
Avg 1948 thru 1985	3.6	3.5	3.5	2.6	2.9	4.1	4.2	5.3	3.5	4.0	3.3	3.6	44.1
WY 1985	17.8	7.2	5.0	2.4	4.0	4.9	6.1	3.2	3.1	1.4	3.1	2.8	61.0
Deviation	+14.2	+3.7	+1.5	-0.2	+1.1	+0.8	+1.9	-2.1	-0.4	-2.6	-0.2	-0.8	+16.9
Pool Elevation													
End of Month	416.94	419.07	414.98	400.48	397.96	395.33	396.67	387.39	386.52	385.74	384.99	384.34	
Maximum	417.26	419.61	419.07	415.07	400.48	398.41	396.67	396.93	387.39	386.52	385.81	384.99	
Minimum	384.19	415.32	413.57	400.48	386.33	389.47	385.37	386.97	386.52	385.74	384.99	384.27	
Pool Content EOM (1,000 AC. FT.)	235.8	258.7	215.8	96.7	81.6	68.0	74.8	35.4	32.5	30.0	27.7	25.7	

LOCK AND DAM NO. 9	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1970 thru 1985	1,328.7	2,420.2	2,706.2	1,880.9	1,953.4	3,698.2	3,889.0	3,957.1	3,594.3	1,692.6	805.2	846.1	28,773.9
WY 1985	2,585.0	3,304.6	4,368.3	5,807.5	3,959.1	9,754.5	6,503.8	5,245.3	4,361.6	1,804.6	1,177.4	1,189.7	50,261.4
Project Rainfall (inches)													
Avg 1971 thru 1985	4.1	4.7	4.7	2.5	2.8	4.6	4.0	5.1	4.2	2.5	2.9	3.7	45.8
WY 1985	14.3	7.3	4.9	2.6	3.7	5.4	4.3	5.1	1.9	0.4	2.8	3.9	56.6
Deviation	+10.2	+2.6	+0.2	+0.1	+0.9	+0.8	+0.3	0.0	-2.3	-2.1	-0.1	+0.2	+10.8
Pool Elevation													
End of Month	286.05	286.12	284.88	287.16	285.08	292.81	283.91	287.52	285.70	287.10	287.38	285.60	
Maximum	286.91	286.84	287.40	287.16	291.10	292.81	292.81	287.65	287.65	287.50	287.79	287.74	
Minimum	284.13	284.08	284.01	283.97	285.08	283.81	282.12	280.97	283.87	284.67	284.98	284.88	
Pool Content EOM (1,000 AC. FT.)	59.4	59.8	53.3	65.5	54.3	111.6	48.4	67.6	57.5	65.2	66.8	57.0	

TOAD SUCK FERRY LOCK AND DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1970 thru 1985	1,289.1	2,481.5	2,479.6	2,075.5	2,109.1	3,962.2	4,098.8	4,097.0	3,665.2	2,207.6	807.3	859.9	30,132.8
WY 1985	3,015.5	3,792.3	4,854.3	6,285.4	3,783.9	9,395.9	6,885.2	5,190.1	4,642.9	1,796.2	1,140.4	1,213.5	51,995.6
Project Rainfall (inches)													
Avg 1971 thru 1985	4.2	5.1	4.8	2.7	3.1	4.8	4.4	5.2	4.4	2.4	2.4	3.6	47.1
WY 1985	15.0	6.5	4.6	2.2	3.9	6.0	6.4	3.2	0.5	2.5	3.0	2.8	56.6
Deviation	+10.8	+1.4	-0.2	-0.5	+0.8	+1.2	+2.0	-2.0	-3.9	+0.1	+0.6	-0.8	+9.5
Pool Elevation													
End of Month	264.44	265.10	266.81	265.13	271.10	275.51	265.00	264.99	265.40	265.63	265.38	265.16	
Maximum	269.70	268.99	272.16	270.87	274.84	275.51	276.10	269.08	265.80	265.74	265.68	265.92	
Minimum	264.35	264.01	264.02	264.25	264.64	269.39	264.50	264.69	263.95	264.81	264.93	264.90	
Pool Content EOM (1,000 AC. FT.)	30.8	33.4	45.1	33.6	76.9	135.2	33.0	33.0	34.7	35.7	34.6	33.7	

ARKANSAS RIVER BASIN

NIMROD LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1944 thru 1985	20.1	37.2	68.4	66.4	87.0	104.1	90.0	97.3	34.8	13.1	5.9	7.1	631.4
WY 1985	402.1	165.3	145.8	63.0	127.3	171.8	125.0	22.9	7.9	0.5	1.1	0.1	1,232.8
Releases (1,000 AC. FT.)													
Avg 1944 thru 1985	10.2	31.0	64.5	65.6	75.6	98.8	94.0	97.6	49.7	24.6	10.7	9.4	631.7
WY 1985	80.1	312.1	248.4	122.6	39.2	77.6	163.6	158.4	7.8	2.4	2.6	0.9	1,215.7
Basin Rainfall (inches)													
Avg 1944 thru 1985	3.8	3.8	3.9	3.1	3.5	5.0	4.7	5.9	4.0	4.0	3.1	3.7	48 3
WY 1985	18.6	7.0	5.3	2.7	3.9	6.6	5.5	3.4	4.1	1.6	3.6	3.2	65.5
Deviation	+14.8	+3.2	+1.4	-0.4	+0.4	+1.6	+0.8	-2.5	+0.1	-2.4	+0.5	-0.5	+17.0
Pool Elevation													
End of Month	373.81	364.45	354.31	344.69	357.51	365.71	362.42	344.86	344.50	343.57	342.82	342.07	
Maximum	374.93	374.69	364.45	354.31	357.51	365.71	367.15	362.42	345.00	344.50	343.77	342.82	
Minimum	342.15	362.73	351.78	342.05	344.69	354.38	358.68	344.85	344.50	343.57	342.82	342.07	
Pool Content EOM (1,000 AC. FT.)	351.1	202.9	99.6	39.7	127.2	219.5	178.3	40.4	38.9	35.0	31.9	29.3	

MURRAY LOCK AND DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1970 thru 1985	1,428.0	2,532.5	2,758.5	2,175.6	2,220.8	4,146.7	4,310.3	4,466.9	3,759.8	1,697.3	767.7	845.4	31,109.5
WY 1985	3,301.2	4,256.4	4,950.6	6,575.1	3,823.0	9,966.4	7,050.1	5,423.7	4,333.9	1,599.5	927.5	1,051.2	53,258.6
Project Rainfall (inches)													
Avg 1970 thru 1985	3.7	5.1	4.4	3.0	2.9	4.4	5.2	5.6	3.7	2.4	2.4	3.5	46.3
WY 1985	3.0	7.4	3.3	2.6	3.2	5.1	6.4	0.2	0.9	0.8	0.1	2.4	35.4
Deviation	-0.7	+2.3	-1.1	-0.4	+0.3	+0.7	+1.2	-5.4	-2.8	-1.6	-2.3	-1.1	-10.9
Pool Elevation													
End of Month	249.05	248.17	248.17	250.31	246.99	247.74	246.70	250.33	248.94	250.44	249.67	249.67	
Maximum	249.77	249.40	249.73	250.31	250.62	247.74	249.88	250.71	250.69	250.79	250.70	249.75	
Minimum	247.19	247.65	246.70	247.06	245.70	244.06	244.10	246.61	246.06	248.85	249.36	249.09	
Pool Content EOM (1,000 AC. FT.)	87.6	79.5	79.5	100.8	69.5	75.8	67.3	101.1	86.6	102.3	94.0	94.0	

DAVID D. TERRY LOCK AND DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1969 thru 1985	1,344.8	2,400.8	2,851.0	2,381.5	2,448.1	4,202.0	4,409.7	4,488.5	3,841.4	1,820.7	811.5	845.0	31,845.0
WY 1985	3,277.9	4,194.9	5,209.0	6,988.3	3,900.1	10,166.6	7,689.8	5,716.9	4,552.0	1,718.0	1,036.8	1,166.4	55,616.7
Project Rainfall (inches)													
Avg 1971 thru 1985	4.3	4.9	4.5	3.6	2.8	4.5	5.0	5.5	4.1	3.4	2.5	3.1	48.2
WY 1985	15.2	5.1	3.2	2.7	2.4	4.4	7.2	2.3	2.4	3.5	3.7	2.3	54.4
Deviation	+10.9	+0.2	-1.3	-0.9	-0.4	-0.1	+2.2	-3.2	-1.7	+0.1	+1.2	-0.8	+6.2
Pool Elevation													
End of Month	230.42	229.98	229.80	230.94	230.52	232.80	230.46	231.12	230.48	231.52	231.10	231.28	
Maximum	231.98	231.38	231.86	231.43	233.58	232.80	235.00	231.38	231.21	231.52	231.58	231.49	
Minimum	228.98	229.21	229.28	229.04	229.37	229.07	229.15	229.35	229.75	230.48	230.70	230.71	
Pool Content EOM (1,000 AC. FT.)	47.3	45.6	44.8	49.3	47.7	58.5	47.4	50.1	47.5	51.9	50.0	50.8	

LOCK AND DAM NO. 5	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1970 thru 1985	1,424.6	2,574.5	2,736.2	2,255.6	2,165.1	4,170.2	4,407.9	4,447.8	3,842.2	1,778.8	811.0	887.4	31,501.3
WY 1985	3,727.1	4,481.2	5,119.8	6,557.5	3,711.4	8,944.9	7,333.3	5,498.3	4,489.5	1,766.5	1,085.5	1,199.7	53,914.7
Project Rainfall (inches)													
Avg 1972 thru 1985	4.2	4.9	4.9	3.3	3.2	4.8	5.1	6.2	3.7	3.5	2.5	3.8	50.1
WY 1985	11.7	4.9	3.6	5.2	2.1	5.8	10.0	2.3	2.6	4.0	2.5	4.1	58.8
Deviation	+7.5	0.0	-1.3	+1.9	-1.1	+1.0	+4.9	-3.9	-1.1	+0.5	0.0	+0.3	+8.7
Pool Elevation													
End of Month	212.78	212.44	211.55	213.20	211.23	212.93	212.48	213.33	212.89	213.91	213.16	213.23	
Maximum	213.50	213.38	213.40	213.49	213.59	212.93	215.68	213.51	213.43	214.53	213.99	213.46	
Minimum	211.00	211.16	211.00	208.10	211.02	209.71	209.78	211.12	211.75	212.89	212.92	212.82	
Pool Content EOM (1,000 AC. FT.)	59.9	57.7	52.3	62.7	50.4	60.9	58.0	63.7	60.6	67.9	62.5	63.0	

LOCK AND DAM NO. 4	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1970 thru 1985	1,432.8	2,606.8	2,803.8	2,323.9	4,233.7	4,325.5	4,614.5	4,609.8	3,985.1	1,801.2	804.0	887.4	34,428.5
WY 1985	3,776.5	4,630.4	5,310.9	6,672.2	3,756.6	9,624.3	8,008.6	5,729.8	4,518.9	1,657.3	976.7	1,075.1	55,737.3
Project Rainfall (inches)													
Avg 1972 thru 1985	4.1	4.6	5.2	3.8	3.3	4.7	4.6	6.2	3.5	3.7	3.0	4.2	50.9
WY 1985	12.8	6.0	5.2	4.8	3.5	5.2	4.6	1.0	2.2	5.1	2.1	1.5	54.0
Deviation	+8.7	+1.4	0.0	+1.0	+0.2	+0.5	0.0	-5.2	-1.3	+1.4	-0.9	-2.7	+3.1
Pool Elevation													
End of Month	195.05	195.58	194.87	196.26	195.14	196.37	196.00	197.01	195.89	196.68	196.95	196.98	
Maximum	196.55	196.72	196.27	196.39	196.85	196.90	199.32	197.19	197.21	197.13	198.98	197.80	
Minimum	194.08	194.31	194.65	194.07	194.93	193.98	195.46	194.90	195.52	195.80	196.68	196.04	
Pool Content EOM (1,000 AC. FT.)	65.3	68.1	64.3	72.1	65.8	72.8	70.4	77.1	69.8	74.9	76.7	76.9	

LOCK AND DAM NO. 3	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1970 thru 1985	1,438.5	2,632.4	2,851.9	2,334.8	2,369.0	4,361.8	4,701.8	4,750.1	4,032.5	1,813.2	782.8	872.3	32,941.1
WY 1985	3,943.9	4,919.7	5,480.5	6,920.7	3,807.2	9,970.4	8,456.1	6,084.9	4,780.7	1,723.7	961.6	1,077.2	58,126.6
Project Rainfall (inches)													
Avg 1971 thru 1985	4.0	4.3	4.6	3.9	3.1	4.7	4.6	5.5	3.6	3.2	3.2	3.6	48.3
WY 1985	12.3	3.1	2.5	4.2	4.3	5.8	5.5	1.5	4.1	1.5	1.1	1.9	47.8
Deviation	+8.3	-1.2	-2.1	+0.3	+1.2	+1.1	+0.9	-4.0	+0.5	-1.7	-2.1	-1.7	-0.5
Pool Elevation													
End of Month	181.23	181.38	181.60	182.40	183.50	183.98	181.78	182.58	181.38	181.80	182.24	182.21	
Maximum	183.00	182.28	183.40	182.40	185.05	184.02	187.55	183.05	182.97	182.42	182.50	182.48	
Minimum	179.84	180.33	180.42	180.32	181.30	181.70	181.77	180.24	181.13	181.20	181.80	181.80	
Pool Content EOM (1,000 AC. FT.)	43.4	44.0	44.8	48.0	52.7	54.9	45.5	48.7	44.0	45.6	47.4	47.2	

LOCK AND DAM NO. 2	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Releases (1,000 AC. FT.)													
Avg 1970 thru 1985	1,445.5	2,635.2	2,993.3	2,396.4	2,455.0	4,517.6	4,885.3	4,410.5	4,042.3	1,814.3	794.2	1,493.6	33,883.2
WY 1985	4,085.7	4,912.8	5,937.8	7,668.6	4,263.0	11,451.7	8,690.7	6,330.8	4,621.4	1,823.8	969.2	1,109.8	61,865.3
Project Rainfall (inches)													
Avg 1971 thru 1985	4.3	5.6	5.4	4.8	4.1	6.5	5.2	5.5	4.1	3.2	3.3	3.8	55.8
WY 1985	14.0	5.2	2.2	4.6	3.8	4.9	3.9	2.1	1.1	3.3	4.8	3.8	53.7
Deviation	+9.7	-0.4	-3.2	-0.2	-0.3	-1.6	-1.3	-3.4	-3.0	+0.1	+1.5	0.0	-2.1
Pool Elevation													
End of Month	161.89	161.58	161.33	163.18	161.02	162.28	162.03	163.35	160.80	163.09	162.19	162.17	
Maximum	163.14	163.32	162.24	163.32	163.48	162.28	162.33	163.35	163.38	163.46	163.09	162.46	
Minimum	160.93	160.74	161.02	160.60	160.89	159.86	161.73	161.45	160.62	160.80	162.03	161.92	
Pool Content EOM (1,000 AC. FT.)	108.9	105.6	102.9	123.4	99.6	113.2	110.4	125.4	97.5	122.3	112.2	112.0	

MORRELL LOCK NO. 1 (No basic data collected)

ALTUS LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1938 THRU 1981	7.13	2.75	3.44	3.77	5.05	5.93	9.57	29.65	20.95	8.39	3.01	3.01	102.7
FY 1985	0.25	0.40	1.07	1.47	5.77	8.53	6.28	5.13	7.38	2.38	0.28	1.43	40.4
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	0.05	0.08	0.06	0.00	0.14	0.61	0.50	17.90	5.72	8.90	6.79	0.50	41.3
FY 1985	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	1.99	0.88	0.77	0.63	0.83	1.19	1.99	4.09	3.19	2.21	2.50	2.30	22.57
FY 1985	1.02	0.69	1.31	0.48	1.09	1.86	1.31	0.63	3.75	0.73	1.84	3.13	17.84
DEVIATION	-0.97	-0.19	0.54	-0.15	0.26	0.67	-0.68	-3.46	0.56	-1.48	-0.66	0.83	-4.73
POOL ELEVATION													
END OF MONTH	1525.10	1525.10	1525.54	1526.17	1529.14	1532.58	1534.55	1535.79	1537.62	1532.18	1522.57	1523.08	
MAXIMUM	1525.26	1525.18	1525.54	1526.17	1529.14	1532.58	1534.55	1535.88	1537.68	1537.62	1532.18	1523.08	
MINIMUM	1525.08	1525.00	1525.08	1525.54	1526.17	1529.14	1532.58	1534.55	1535.73	1532.18	1522.57	1522.03	
POOL CONTENT-EOM (1000AC FT)	9.22	9.22	9.97	11.05	16.76	24.47	29.37	32.64	37.81	23.52	5.39	6.10	

RED RIVER BASIN

MOUNTAIN PARK DAM	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1926 THRU 1981	1 51	0 45	0 36	0 25	0 33	0 66	1 38	5 73	4 07	1 28	0 73	1 77	18 5
FY 1985	0 10	0 51	2 76	0 23	2 40	5 24	4 16	0 79	9 74	0 82	1 02	5 73	33 5
RELEASES(1000AC FT)													
AVG 1981 THRU 1985	0 30	1 31	0 00	0 00	0 00	0 04	0 05	0 04	0 24	0 78	0 00	0 00	2 8
FY 1985	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2 49	1 35	1 14	1 03	1 18	1 55	2 43	4 82	3 37	2 15	2 26	2 87	26 64
FY 1985	0 92	1 79	3 30	0 98	2 04	3 69	3 69	0 64	8 76	1 23	2 61	4 48	34 13
DEVIATION	-1 57	0 44	2 16	-0 05	0 86	2 14	1 26	-4 18	5 39	-0 92	0 35	1 61	7 49
POOL ELEVATION													
END OF MONTH	1406 35	1406 12	1406 44	1406 34	1406 53	1407 11	1407 34	1406 80	1407 88	1407 24	1406 59	1407 08	
MAXIMUM	1406 76	1406 35	1406 44	1406 50	1406 55	1407 12	1407 34	1407 34	1408 02	1407 88	1407 24	1407 08	
MINIMUM	1406 35	1406 05	1406 02	1406 34	1406 11	1406 52	1406 93	1406 80	1406 64	1407 24	1406 52	1405 94	
POOL CONTENT-EOM													
(1000AC FT)	62 21	61 00	62 69	62 16	63 16	66 23	67 49	64 58	70 45	66 94	63 47	66 07	

RED RIVER BASIN

LAKE KEMP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1924 THRU 1981	22 20	5 94	6 74	3 73	5 59	7 68	12 78	38 02	25 28	15 57	18 91	27 01	189 4
FY 1985	10 72	10 00	22 17	11 95	18 13	20 77	13 98	11 61	36 64	1 81	0 45	3 19	161 4
RELEASES(1000AC FT)													
AVG 1976 THRU 1985	4 38	4 03	1 64	1 37	0 41	4 36	3 68	4 32	7 58	15 75	13 05	6 40	67 0
FY 1985	0 00	0 00	0 00	13 66	0 00	0 00	0 82	2 39	2 61	13 03	13 23	10 69	56 4
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2 41	1 08	0 98	0 83	1 00	1 10	1 88	3 66	2 73	1 99	2 22	2 92	22 80
FY 1985	1 04	0 87	1 73	0 31	0 89	1 87	1 04	0 75	3 10	0 54	1 00	0 84	13 98
DEVIATION	-1 37	-0 21	0 75	-0 52	-0 11	0 77	-0 84	-2 91	0 37	-1 45	-1 22	-2 08	-8 82
POOL ELEVATION													
END OF MONTH	1137 65	1138 35	1140 00	1139 63	1140 80	1141 99	1142 40	1142 42	1144 04	1142 59	1140 88	1139 69	
MAXIMUM	1137 65	1138 36	1140 00	1140 79	1140 80	1141 99	1142 42	1142 57	1144 36	1144 04	1142 59	1140 88	
MINIMUM	1136 96	1137 60	1138 33	1139 62	1139 59	1140 80	1141 92	1142 05	1142 18	1142 59	1140 88	1139 57	
POOL CONTENT-EOM													
(1000AC FT)	182 95	190 76	210 90	206 24	221 54	238 06	244 04	244 33	268 64	246 81	222 60	206 99	

RED RIVER BASIN

MAURINA LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1925 THRU 1981	7.81	4.14	3.26	1.71	3.76	5.22	7.51	26.25	17.73	3.32	1.70	4.28	86.7
FY 1985	18.95	5.46	28.80	33.44	70.83	77.38	38.68	16.92	47.78	1.99	2.06	2.42	344.7
RELEASES(1000AC.FT.)													
AVG 1983 THRU 1985	10.33	31.42	3.30	15.64	5.97	36.08	14.36	20.61	15.49	0.41	0.08	0.08	153.8
FY 1985	0.38	0.00	9.90	46.92	13.71	100.70	40.75	39.91	41.43	1.23	0.25	0.24	295.4
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.92	1.79	1.47	1.30	1.47	1.94	2.75	5.21	3.61	2.31	2.36	3.26	30.39
FY 1985	5.39	2.44	3.71	1.51	4.30	5.45	4.60	1.25	6.77	0.56	2.42	3.63	42.03
DEVIATION	2.47	0.65	2.24	0.21	2.83	3.51	1.85	-3.96	3.16	-1.75	0.06	0.37	11.64
POOL ELEVATION													
END OF MONTH	950.62	950.93	952.75	951.70	956.55	954.60	954.05	951.45	951.51	950.94	950.42	950.08	
MAXIMUM	950.62	951.14	952.75	955.40	957.20	956.55	954.68	954.37	954.55	951.62	950.95	950.46	
MINIMUM	948.81	950.62	950.90	951.42	951.38	951.90	951.45	951.44	951.39	950.94	950.42	949.71	
POOL CONTENT-EOM													
(1000AC.FT)	194.95	198.17	217.63	206.18	262.17	238.68	232.19	203.58	204.20	198.27	192.87	189.33	

RED RIVER BASIN

FOSS RESERVOIR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC.FT.)													
AVG 1926 THRU 1980	3.53	1.79	1.23	1.31	1.79	2.86	9.34	15.36	12.37	3.69	3.11	2.87	59.3
FY 1985	1.16	0.78	2.17	1.80	2.76	5.75	4.42	3.69	4.27	0.07	2.91	0.05	29.8
RELEASES(1000AC.FT.)													
AVG 1978 THRU 1985	1.75	0.33	0.31	0.34	0.52	0.33	0.92	2.70	9.84	2.78	0.51	0.39	20.7
FY 1985	0.61	0.59	0.61	0.61	0.55	0.61	0.59	0.61	0.59	0.61	0.61	0.59	7.2
RAINFALL(INCHES)													
AVG 1930 THRU 1980	1.92	1.06	0.74	0.64	0.88	1.30	2.25	4.23	3.11	1.98	2.44	2.25	22.80
FY 1985	1.13	0.60	1.42	0.46	1.56	2.62	1.58	0.81	3.21	0.74	2.05	3.46	19.64
DEVIATION	-0.79	-0.46	0.68	-0.18	0.68	1.32	-0.67	-3.42	0.10	-1.24	-0.39	1.21	-3.16
POOL ELEVATION													
END OF MONTH	1636.18	1635.93	1636.04	1636.11	1636.32	1636.90	1637.11	1637.05	1636.90	1636.00	1635.71	1635.04	
MAXIMUM	1636.43	1636.18	1636.05	1636.11	1636.32	1636.90	1637.11	1637.13	1637.20	1636.90	1636.00	1635.71	
MINIMUM	1636.18	1635.93	1635.79	1636.04	1636.10	1636.32	1636.90	1637.00	1636.90	1636.00	1635.71	1635.04	
POOL CONTENT-EOM													
(1000AC FT)	141.53	140.08	140.71	141.12	142.35	145.73	146.97	146.61	145.73	140.48	138.83	135.03	

RED RIVER BASIN

FORT COBB RESERVOIR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1926 THRU 1981	2.94	1.88	2.05	2.27	2.38	3.09	4.10	6.26	5.89	2.86	1.85	2.41	38.0
FY 1985	0.61	0.15	2.47	1.38	3.65	5.95	2.91	1.12	4.84	0.40	0.27	1.25	25.0
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	0.30	0.53	0.00	0.00	0.10	0.22	0.00	0.20	5.48	0.81	0.09	0.00	7.7
FY 1985	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.37	1.39	1.18	1.00	1.12	1.62	2.64	4.78	3.67	2.28	2.47	3.07	27.59
FY 1985	2.25	1.88	3.44	1.53	3.69	4.10	1.99	0.31	5.86	1.21	2.09	3.22	31.57
DEVIATION	-0.12	0.49	2.26	0.53	2.57	2.48	-0.65	-4.47	2.19	-1.07	-0.38	0.15	3.98
POOL ELEVATION													
END OF MONTH	1337.73	1337.45	1337.88	1337.91	1338.49	1339.71	1339.96	1339.56	1339.98	1339.18	1338.40	1338.10	
MAXIMUM	1338.04	1337.73	1337.88	1337.95	1338.52	1339.71	1339.96	1339.97	1340.36	1339.99	1339.18	1338.40	
MINIMUM	1337.71	1337.45	1337.40	1337.85	1337.87	1338.49	1339.60	1339.56	1339.52	1339.18	1338.40	1337.62	
POOL CONTENT-EOM (1000AC FT)	63.70	62.71	64.23	64.33	66.44	70.98	71.93	70.42	72.00	68.98	66.11	65.01	

RED RIVER BASIN

ARBUCKLE RESERVOIR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC.FT.)													
AVG 1926 THRU 1981	3.80	3.24	3.29	3.07	4.90	5.63	8.07	12.49	7.59	2.94	2.12	3.74	60.9
FY 1985	3.07	4.28	18.66	9.42	8.70	26.44	17.64	4.42	10.07	1.51	0.68	0.33	105.2
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	1.59	0.57	1.24	1.65	2.19	2.22	5.29	10.37	9.53	0.32	0.26	0.12	35.4
FY 1985	0.06	0.06	9.75	15.48	7.53	12.32	26.26	6.59	9.42	0.06	0.06	0.06	87.7
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.48	2.33	2.06	1.75	2.21	2.92	3.86	5.65	3.90	2.48	2.78	3.75	37.17
FY 1985	7.65	3.30	4.15	2.12	1.82	4.99	5.60	1.97	7.07	1.33	1.11	2.73	43.84
DEVIATION	4.17	0.97	2.09	0.37	-0.39	2.07	1.74	-3.68	3.17	-1.15	-1.67	-1.02	6.67
POOL ELEVATION													
END OF MONTH	870.47	872.06	875.42	872.30	872.38	877.49	873.72	872.16	872.04	871.76	871.08	870.38	
MAXIMUM	870.47	872.06	875.42	876.58	874.20	877.49	877.68	873.72	874.73	872.13	871.80	871.08	
MINIMUM	869.37	870.47	872.06	872.14	872.01	872.01	872.08	871.99	872.04	871.76	871.08	870.38	
POOL CONTENT-EOM (1000AC FT)	68.87	72.54	80.78	73.11	73.30	86.19	76.53	72.78	72.49	71.84	70.26	68.67	

RED RIVER BASIN

LAKE TEXOMA	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1906 THRU 1981	366.34	199.55	180.83	140.89	166.47	227.04	413.04	812.92	688.44	214.49	177.99	240.90	3828.9
FY 1985	261.10	181.13	493.49	712.16	631.14	1492.16	963.37	594.05	1467.37	148.36	58.31	39.17	7041.8
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	245.50	222.13	128.95	181.53	109.42	219.15	230.34	376.53	777.03	300.44	143.98	86.76	3021.8
FY 1985	5.32	80.77	266.01	819.43	318.75	1270.84	1142.14	753.72	1336.04	315.80	161.13	44.07	6514.0
RAINFALL(INCHES)													
AVG 1930 THRU 1980	2.49	1.39	1.22	1.13	1.28	1.64	2.48	4.39	3.30	2.20	2.33	2.89	26.74
FY 1985	3.30	1.80	2.78	1.08	1.88	3.54	2.61	1.41	5.95	0.88	1.79	2.75	29.77
DEVIATION	0.81	0.41	1.56	-0.05	0.60	1.90	0.13	-2.98	2.65	-1.32	-0.54	-0.14	3.03
POOL ELEVATION													
END OF MONTH	613.80	615.00	617.56	616.23	619.57	621.57	619.33	617.09	618.20	615.62	613.65	613.09	
MAXIMUM	613.80	615.21	617.65	619.75	619.58	621.57	622.85	620.35	624.99	618.26	615.62	613.65	
MINIMUM	610.57	613.80	614.89	616.20	615.75	617.56	617.32	617.09	616.96	615.62	613.65	612.95	
POOL CONTENT-EOM													
(1000AC.FT)	2383.56	2476.80	2693.70	2576.69	2879.53	3074.16	2856.78	2651.40	2751.74	2526.40	2372.13	2329.46	

RED RIVER BASIN

PAT MAYSE LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT)													
AVG 1937 THRU 1981	4.89	7.23	7.99	6.38	11.78	12.30	16.04	15.77	10.14	3.64	1.49	4.15	101.8
FY 1985	10.39	13.01	27.52	5.20	15.23	32.07	8.11	16.95	16.39	1.27	0.00	0.00	146.1
RELEASES(1000AC.FT.)													
AVG 1976 THRU 1985	0.36	2.60	4.20	2.50	5.38	13.08	9.96	11.63	13.21	5.71	0.68	0.00	69.3
FY 1985	0.00	3.82	19.39	13.20	7.96	23.90	13.08	13.51	18.30	1.65	0.00	0.00	114.8
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.55	3.39	3.21	2.76	3.09	3.74	4.71	5.30	4.01	3.28	2.62	4.19	43.85
FY 1985	5.69	3.07	3.32	1.29	2.09	5.93	4.09	4.49	4.46	1.89	0.04	1.22	37.58
DEVIATION	2.14	-0.32	0.11	-1.47	-1.00	2.19	-0.62	-0.81	0.45	-1.39	-2.58	-2.97	-6.27
POOL ELEVATION													
END OF MONTH	450.76	452.18	453.30	451.74	452.58	453.55	452.42	452.45	451.67	450.93	450.08	449.48	
MAXIMUM	450.76	452.24	454.10	453.48	452.82	454.80	453.55	452.70	454.45	451.76	450.93	450.08	
MINIMUM	449.27	450.76	451.65	451.74	451.58	452.08	451.73	452.24	451.67	450.93	450.08	449.40	
POOL CONTENT-EOM													
(1000AC FT)	123.08	131.72	138.72	129.01	134.20	140.32	133.20	133.39	128.59	124.09	119.07	115.58	

RED RIVER BASIN

SARDIS LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1926 THRU 1981	9.07	15.39	20.38	21.79	26.99	30.93	39.85	39.52	19.88	6.87	2.66	9.87	245.9
FY 1985	156.10	57.62	68.56	18.32	52.17	49.69	58.85	13.45	10.28	3.19	0.50	1.17	489.9
RELEASES(1000AC FT.)													
AVG 1985 THRU 1985	38.35	147.31	62.15	31.14	41.89	55.57	19.05	49.13	3.92	0.00	0.00	0.00	448.5
FY 1985	38.35	147.31	62.15	31.14	41.89	55.57	19.05	49.13	3.92	0.00	0.00	0.00	448.5
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.44	3.40	2.78	2.50	3.01	3.63	4.78	6.03	4.34	3.54	3.28	4.57	45.30
FY 1985	11.46	4.93	5.07	2.04	3.02	4.96	5.92	2.66	4.42	2.28	1.57	2.49	50.82
DEVIATION	8.02	1.53	2.29	-0.46	0.01	1.33	1.14	-3.37	0.08	-1.26	-1.71	-2.08	5.52
POOL ELEVATION													
END OF MONTH	602.71	596.78	597.12	596.13	596.98	596.34	599.00	596.00	595.99	595.74	595.23	594.89	
MAXIMUM	603.87	603.76	597.33	597.31	598.17	597.07	599.00	599.27	596.47	596.00	595.74	595.23	
MINIMUM	595.37	596.12	595.98	596.00	595.90	595.85	595.88	595.91	595.97	595.74	595.23	594.81	
POOL CONTENT-EOM (1000AC FT)	357.52	270.55	275.14	261.84	273.23	264.65	301.40	260.10	259.97	256.75	250.17	245.81	

RED RIVER BASIN

HUGO LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1926 THRU 1964	40.79	74.01	117.34	160.37	177.57	171.23	257.85	250.16	114.02	56.90	19.14	49.05	1485.4
FY 1985	635.31	507.87	383.60	193.59	310.41	338.78	296.13	269.55	131.30	45.36	3.60	5.83	3121.3
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	68.57	101.09	109.15	83.17	153.50	225.56	215.02	226.95	145.65	50.18	18.14	13.16	1410.1
FY 1985	415.78	689.04	368.46	196.38	214.88	374.80	173.69	413.57	152.96	43.55	18.32	13.44	3074.9
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.65	3.75	3.19	2.85	3.27	3.92	5.03	6.09	4.24	3.54	3.31	4.55	47.39
FY 1985	8.47	5.45	4.98	1.85	2.48	4.77	5.69	4.06	4.38	3.37	0.99	3.09	49.58
DEVIATION	4.82	1.70	1.79	-1.00	-0.79	0.85	0.66	-2.03	0.14	-0.17	-2.32	-1.46	2.19
POOL ELEVATION													
END OF MONTH	415.47	405.17	406.15	405.90	411.05	408.68	415.17	406.58	404.62	404.30	402.62	401.63	
MAXIMUM	417.71	420.24	409.50	407.54	412.47	411.05	415.17	417.65	411.64	406.20	404.30	402.62	
MINIMUM	401.72	405.03	404.61	404.50	404.40	404.57	404.52	404.40	404.62	404.30	402.62	401.45	
POOL CONTENT-EOM (1000AC FT)	343.77	166.61	180.12	176.54	258.28	218.55	337.54	186.48	159.17	154.85	133.72	121.99	

RED RIVER BASIN

PINE CREEK LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1929 THRU 1981	22.63	38.04	56.04	60.24	78.03	82.93	95.41	104.78	42.28	17.31	8.38	22.66	628.7
FY 1985	314.68	200.69	148.46	82.21	135.97	124.07	121.79	78.55	45.72	4.08	2.21	1.29	1259.7
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	26.91	42.50	57.26	41.61	61.36	94.39	77.66	95.52	65.28	14.87	6.45	4.99	588.8
FY 1985	105.66	342.02	206.56	85.56	85.80	149.64	80.17	121.97	43.60	7.01	9.17	4.91	1242.1
RAINFALL(INCHES)													
AVG 1930 THRU 1980	3.76	3.89	3.59	3.12	3.48	4.25	5.15	6.21	4.28	3.87	3.53	4.67	49.80
FY 1985(AT DAM)	8.92	5.81	5.77	3.28	4.33	5.35	4.75	4.78	4.98	3.65	0.79	3.22	55.63
DEVIATION	5.16	1.92	2.18	0.16	0.85	1.10	-0.40	-1.43	0.70	-0.22	-2.74	-1.45	5.83
POOL ELEVATION													
END OF MONTH	466.39	451.11	439.60	438.70	448.45	443.70	450.51	442.58	442.51	441.45	439.33	438.06	
MAXIMUM	466.39	473.13	451.11	442.85	451.08	448.45	450.51	452.23	446.97	442.68	441.45	439.33	
MINIMUM	438.25	451.00	438.11	438.05	437.76	437.81	438.13	442.49	442.50	441.45	439.33	437.97	
POOL CONTENT-EOM (1000AC FT)	266.85	123.05	60.05	56.45	105.47	78.72	118.93	73.24	72.91	68.00	58.95	53.98	

RED RIVER BASIN

BROKEN BOW LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS(1000AC FT.)													
AVG 1930 THRU 1981	34.81	58.40	95.11	111.71	114.40	140.87	130.36	138.16	52.17	26.71	14.15	23.55	940.4
FY 1985	456.20	265.39	215.11	83.31	176.53	169.59	148.16	45.92	31.04	11.38	0.25	0.16	1603.0
RELEASES(1000AC FT.)													
AVG 1976 THRU 1985	31.37	61.04	88.70	66.06	60.65	102.97	115.61	109.22	95.87	56.87	39.49	24.57	852.4
FY 1985	95.88	438.84	295.34	98.05	79.79	213.38	128.68	105.59	27.88	17.05	13.38	20.91	1534.7
RAINFALL(INCHES)													
AVG 1930 THRU 1980	4.14	4.08	4.15	3.72	3.83	4.89	5.28	6.29	4.31	4.23	3.69	4.60	53.21
FY 1985	12.15	5.97	4.73	1.88	3.13	6.09	5.52	3.13	3.20	3.31	1.98	1.86	52.95
DEVIATION	8.01	1.89	0.58	-1.84	-0.70	1.20	0.24	-3.16	-1.11	-0.92	-1.71	-2.74	-0.26
POOL ELEVATION													
END OF MONTH	617.35	606.15	600.57	599.40	605.67	602.40	603.63	599.10	598.90	598.04	596.53	594.49	
MAXIMUM	618.45	620.40	606.15	601.47	606.19	605.67	603.69	603.69	599.13	598.90	598.04	596.53	
MINIMUM	593.12	606.15	599.44	599.40	598.96	599.35	599.41	598.80	598.37	598.04	596.52	594.49	
POOL CONTENT-EOM (1000AC FT)	1193.23	1015.60	933.34	916.67	1008.35	959.83	977.90	912.42	909.59	897.51	876.55	848.69	

DEQUEEN LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1930 thru 1985	7.7	13.6	21.7	23.8	24.7	30.8	29.1	30.5	10.9	6.1	3.8	6.1	208.8
WY 1985	100.3	23.4	38.1	14.9	37.1	58.5	44.3	9.5	6.9	2.0	0.5	0.5	336.0
Releases (1,000 AC. FT.)													
Avg 1979 thru 1985	13.0	18.3	30.5	15.7	20.6	28.5	30.8	35.2	24.9	13.5	5.5	1.6	238.1
WY 1985	37.3	76.6	45.3	16.9	22.6	42.9	47.4	34.4	6.4	1.5	1.5	1.2	334.0
Basin Rainfall (inches)													
Avg 1930 thru 1985	4.1	4.3	4.3	3.7	3.9	4.9	5.3	4.7	4.3	4.4	3.3	4.3	51.5
WY 1985	15.8	5.0	6.3	2.6	4.5	9.0	6.9	4.0	5.8	3.9	0.9	3.8	68.5
Deviation	+11.7	+0.7	+2.0	-1.1	+0.6	+4.1	+1.6	-0.7	+1.5	-0.5	-2.4	-0.5	+17.0
Pool Elevation													
End of Month	463.07	442.30	438.36	437.09	444.68	451.30	449.79	437.27	437.11	436.94	435.83	435.03	
Maximum	465.50	464.11	445.28	439.69	448.30	451.30	451.61	449.79	438.68	437.11	436.94	435.83	
Minimum	437.12	438.54	436.98	436.87	436.91	436.49	437.17	437.27	437.03	436.93	435.83	435.02	
Pool Content EOM (1,000 AC. FT.)	98.2	44.6	37.2	35.1	49.4	64.5	60.9	35.4	35.1	34.8	33.0	31.7	

GILLHAM LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1930 thru 1985	14.2	24.8	40.7	45.4	44.2	56.3	49.6	50.1	19.6	10.9	5.1	9.6	370.5
WY 1985	162.2	53.4	71.6	28.5	67.4	105.5	68.8	14.9	6.3	2.5	1.0	1.6	583.7
Releases (1,000 AC. FT.)													
Avg 1977 thru 1985	11.9	27.9	47.7	33.6	34.5	47.6	65.8	56.6	34.1	14.3	10.7	2.9	387.6
WY 1985	56.4	142.3	85.6	31.2	37.6	85.6	73.1	54.9	9.5	3.3	3.1	2.9	585.5
Basin Rainfall (inches)													
Avg 1930 thru 1985	4.3	4.5	4.3	3.9	4.0	5.2	5.4	6.5	4.6	4.4	3.3	4.6	55.0
WY 1985	16.5	5.0	6.4	2.5	4.6	10.6	7.4	3.8	4.8	5.1	1.7	3.9	72.3
Deviation	+12.2	+0.5	+2.1	-1.4	+0.6	+5.4	+2.0	-2.7	+0.2	+0.7	-1.6	-0.7	+17.3
Pool Elevation													
End of Month	548.35	512.90	504.10	502.13	519.73	528.60	526.57	504.86	502.22	501.24	499.07	497.72	
Maximum	550.06	549.25	514.70	505.84	523.08	528.60	529.12	526.84	505.13	502.22	501.24	499.07	
Minimum	502.17	510.90	502.36	501.19	501.52	502.20	501.87	503.43	502.22	501.24	499.07	497.72	
Pool Content EOM (1,000 AC. FT.)	139.3	50.0	36.0	33.2	62.9	82.4	77.6	37.1	33.3	32.0	29.2	27.5	

DIERKS LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1930 thru 1985	4.8	9.5	16.4	19.2	17.8	22.1	19.5	21.4	7.2	4.3	1.2	3.1	146.5
WY 1985	46.4	11.9	24.6	9.5	21.2	28.3	29.5	3.9	1.7	0.1	0.1	0.1	177.3
Releases (1,000 AC. FT.)													
Avg 1977 thru 1985	4.6	8.8	15.0	15.1	13.1	18.6	18.5	19.6	11.4	8.0	2.3	0.9	135.9
WY 1985	16.2	38.8	22.1	15.1	11.7	26.8	19.8	23.1	4.0	1.1	1.1	0.9	180.7
Basin Rainfall (inches)													
Avg 1930 thru 1985	4.7	4.6	4.5	4.0	4.1	5.1	5.3	6.3	4.9	4.1	3.2	3.9	54.7
WY 1985	14.0	4.2	6.4	2.8	4.8	7.5	7.8	3.9	4.5	2.5	2.0	3.3	63.7
Deviation	+9.3	-0.4	+1.9	-1.2	+0.7	+2.4	+2.5	-2.4	-0.4	-1.6	-1.2	-0.6	+9.0
Pool Elevation													
End of Month	543.33	528.53	530.12	526.25	532.45	533.18	538.28	526.32	524.16	522.96	521.68	520.71	
Maximum	544.56	543.62	534.24	531.21	533.65	533.18	538.44	538.28	526.32	524.16	522.96	521.68	
Minimum	526.39	527.78	526.08	525.95	526.11	526.08	526.18	526.19	523.96	522.96	521.68	520.71	
Pool Content EOM (1,000 AC. FT.)	60.3	33.2	35.6	30.0	39.4	40.6	49.8	30.1	27.2	25.7	24.2	23.0	

MILLWOOD LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1,000 AC. FT.)													
Avg 1929 thru 1985	122.8	253.0	392.9	437.8	491.0	582.6	604.3	668.1	291.7	128.2	71.0	97.6	4,140.7
WY 1985	759.9	1,234.9	990.7	419.4	633.6	920.1	733.1	516.1	196.7	32.4	20.6	23.8	6,481.3
Releases (1,000 AC. FT.)													
Avg 1976 thru 1985	139.7	244.6	455.7	305.6	373.0	539.1	528.5	531.4	380.1	208.2	68.0	75.8	3,849.7
WY 1985	579.1	1,186.5	1,146.8	415.3	539.5	999.9	625.1	619.1	186.7	19.5	11.2	126.7	6,455.4
Intervening Basin Rainfall (inches)													
Avg 1930 thru 1985	3.9	4.3	4.0	3.6	3.8	4.5	4.9	5.9	4.0	3.6	2.9	3.9	49.3
WY 1985	11.9	5.0	5.2	2.5	4.5	6.3	6.1	5.0	4.5	2.4	1.1	3.5	58.0
Deviation	+8.0	+0.7	+1.2	-1.1	+0.7	+1.8	+1.2	-0.9	+0.5	-1.2	-1.8	-0.4	+8.7
Pool Elevation													
End of Month	263.00	264.15	259.58	259.63	262.39	259.79	262.78	259.37	259.32	259.40	259.30	254.91	
Maximum	263.21	264.47	264.15	259.63	263.22	262.39	262.78	262.78	260.25	259.40	259.53	259.31	
Minimum	255.60	262.81	259.26	258.83	259.14	259.40	259.21	259.34	259.19	259.23	259.30	254.81	
Pool Content EOM (1,000 AC. FT.)	331.0	375.1	216.5	218.0	309.0	222.8	323.1	210.2	208.7	211.1	208.1	99.7	

RED RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
WRIGHT PATMAN LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1957 THRU 1932	77	165	220	165	229	257	286	438	195	66	19	38	2155
FY 1985	245	322	513	113	270	613	338	328	112	16	0	0	2370
RELEASES (1000 AC,FT.)													
AVG 1957 THRU 1932	109	152	191	205	216	234	200	274	252	166	52	48	2099
FY 1985	45	429	361	307	172	357	517	277	170	6	5	7	2653
RAINFALL (INCHES)													
AVG 1957 THRU 1977	3.68	3.29	3.65	2.47	3.06	3.93	4.87	4.44	4.25	3.40	2.67	4.86	44.57
FY 1985	12.05	3.91	4.59	1.87	3.65	5.35	5.10	4.47	3.22	3.42	0.74	2.56	50.93
DEVIATION	8.37	0.62	0.94	-0.60	0.59	1.42	0.23	0.03	-1.03	0.02	-1.93	-2.30	6.36
POOL ELEVATION													
END OF MONTH	229.57	226.00	230.07	223.80	226.84	233.08	228.18	229.10	226.84	226.42	225.45	224.43	
MAXIMUM	229.57	232.69	230.07	230.07	226.84	233.04	233.14	229.10	230.18	226.92	226.42	225.45	
MINIMUM	223.61	226.00	222.52	223.80	223.03	226.34	227.35	226.59	226.84	226.42	225.45	224.42	
POOL CONTENT EOM (1000 AC.FT.)	421	238	440	235	325	566	370	403	325	312	282	252	

RED RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
LAKE O THE PINES													
INFLOWS (1000 AC.FT.)													
AVG 1958 THRU 1982	10	25	45	53	56	75	78	64	31	10	5	13	465
FY 1985	30	23	50	26	96	77	71	90	11	7	0	1	482
RELEASES (1000 AC,FT.)													
AVG 1958 THRU 1982	10	15	41	49	54	68	58	53	35	15	11	13	427
FY 1985	2	2	23	34	33	112	36	80	30	2	2	2	358
RAINFALL (INCHES)													
AVG 1957 THRU 1977	3.07	3.53	3.69	2.59	3.16	3.73	4.90	4.01	3.73	2.79	2.33	3.93	41.46
FY 1985	12.95	4.51	3.68	2.00	3.30	4.31	5.31	4.47	3.14	3.63	0.69	2.35	51.34
DEVIATION	9.88	0.98	-0.01	-0.59	0.64	0.58	0.91	0.46	-0.59	0.84	-1.64	-1.58	9.83
POOL ELEVATION													
END OF MONTH	227.44	223.30	229.52	223.96	231.98	230.02	231.50	231.59	230.19	229.91	229.05	223.56	
MAXIMUM	227.44	228.30	229.73	229.52	231.93	231.98	231.50	232.17	231.59	230.19	229.91	229.06	
MINIMUM	225.98	227.44	223.30	223.51	223.92	229.90	223.77	230.40	230.06	229.71	229.05	223.56	
POOL CONTENT EOM (1000 AC.FT.)	235	251	274	264	324	284	314	316	237	282	265	256	

NECHES RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
SAM RAYBURN RESERVOIR													
INFLOWS (1000 AC.FT.)													
AVG 1908 THRU 1982	40	86	172	256	258	292	283	313	136	58	34	32	1956
FY 1985	207	160	172	213	392	350	138	150	18	43	15	52	1920
RELEASES (1000 AC,FT.)													
AVG 1965 THRU 1982	52	42	62	94	114	143	146	209	190	147	143	92	1434
FY 1985	93	5	0	4	45	178	327	220	151	156	172	141	1492
RAINFALL (INCHES)													
AVG 1931 THRU 1960	3.15	4.67	5.02	4.65	4.18	3.69	4.64	5.22	3.55	3.72	2.93	2.87	48.29
FY 1985	11.51	4.26	2.82	3.09	4.14	4.07	3.29	3.17	1.17	4.35	1.33	3.06	46.26
DEVIATION	8.36	-0.41	-2.20	-1.56	-0.04	0.38	-1.35	-2.05	-2.38	0.63	-1.60	0.19	-2.03
POOL ELEVATION													
END OF MONTH	158.75	160.05	161.50	163.26	166.12	167.30	165.41	164.45	162.78	161.22	159.10	157.69	
MAXIMUM	158.75	160.08	161.60	163.31	166.12	167.48	167.36	165.52	164.45	162.78	161.22	159.11	
MINIMUM	156.94	158.75	160.04	161.50	163.21	166.12	164.86	164.44	162.78	161.22	159.10	157.44	
POOL CONTENT EOM (1000 AC.FT.)	2294	2426	2577	2769	3099	3242	3015	2904	2716	2548	2329	2191	

NECHES RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
B.A. STEINHAGEN LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1908 THRU 1982	74	151	284	438	439	495	514	607	290	141	81	67	3531
FY 1985	238	175	120	204	346	554	479	312	169	169	171	146	3083
RELEASES (1000 AC,FT.)													
AVG 1951 THRU 1982	96	130	234	313	338	376	408	601	294	178	122	109	3198
FY 1985	222	183	111	206	327	568	475	297	162	176	165	142	3034
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.92	4.25	4.71	4.10	3.59	3.92	4.60	5.00	3.43	3.27	2.81	2.85	45.45
FY 1985	10.29	4.23	3.16	2.60	4.79	3.99	2.79	2.41	1.53	4.00	1.42	3.55	44.76
DEVIATION	7.37	-0.02	-1.55	-1.50	1.20	0.07	-1.81	-2.59	-1.90	0.73	-1.39	0.70	-0.69
POOL ELEVATION													
END OF MONTH	82.28	81.41	81.97	81.66	83.03	81.78	81.82	82.62	82.73	81.75	81.74	81.64	
MAXIMUM	83.40	83.67	82.31	83.60	83.12	83.31	83.20	82.68	82.81	83.09	83.10	83.43	
MINIMUM	80.38	80.95	81.21	81.66	80.56	80.53	81.12	81.47	80.74	80.68	81.12	81.03	
POOL CONTENT EOM (1000 AC.FT.)	85	74	81	77	95	79	79	89	91	78	78	77	

TRINITY RIVER BASIN

BENBROOK LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1924 THRU 1982	2	3	2	3	6	7	9	14	6	2	1	1	56
FY 1985	4	1	7	6	4	12	18	19	4	1	1	2	79
RELEASES (1000 AC,FT.)													
AVG 1952 THRU 1982	1	4	2	2	4	5	5	10	11	2	2	1	49
FY 1985	0	0	1	1	2	2	1	29	2	1	2	2	43
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.83	2.22	2.30	2.06	2.06	2.36	3.79	4.75	3.28	2.16	2.10	2.44	32.35
FY 1985	8.68	2.27	4.04	1.03	1.84	3.22	4.61	2.36	3.06	1.52	0.44	3.46	36.53
DEVIATION	5.85	0.05	1.74	-1.03	-0.22	0.86	0.82	-2.39	-0.22	-0.64	-1.66	1.02	4.18
POOL ELEVATION													
END OF MONTH	687.06	686.98	688.54	689.82	690.32	692.89	697.11	694.15	694.11	693.37	692.37	691.65	
MAXIMUM	687.06	687.15	688.54	689.93	690.32	692.89	697.11	697.47	694.41	694.11	693.37	692.37	
MINIMUM	686.16	686.96	686.80	688.54	689.51	690.32	692.69	694.15	693.96	693.37	692.37	691.58	
POOL CONTENT EOM (1000 AC.FT.)	64	64	69	73	75	84	101	89	89	86	82	80	

TRINITY RIVER BASIN

LEWISVILLE LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1924 THRU 1982	41	30	26	24	42	57	74	99	52	19	11	29	504
FY 1985	20	30	78	66	76	138	107	107	89	7	4	11	733
RELEASES (1000 AC,FT.)													
AVG 1954 THRU 1982	30	45	44	27	25	33	33	71	77	41	31	22	479
FY 1985	6	10	11	9	11	59	115	127	131	18	24	17	538
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.96	2.33	2.53	2.14	2.65	2.53	4.08	5.05	3.88	2.57	2.43	2.88	36.04
FY 1985	5.91	2.87	4.48	1.35	2.17	4.85	5.35	3.26	4.49	1.44	0.49	3.06	39.72
DEVIATION	2.95	0.54	1.95	-0.79	-0.49	2.32	1.27	-1.79	0.61	-1.13	-1.94	0.18	3.68
POOL ELEVATION													
END OF MONTH	507.56	508.36	511.78	514.22	516.76	519.56	519.89	517.60	515.24	513.93	512.02	510.91	
MAXIMUM	507.56	508.58	511.78	514.23	516.76	519.72	519.56	519.05	517.60	515.24	513.34	512.02	
MINIMUM	506.80	507.56	508.00	511.78	514.10	516.76	516.54	517.60	515.24	513.93	512.02	510.80	
POOL CONTENT EOM (1000 AC.FT.)	310	323	386	440	500	571	554	521	463	433	391	369	

TRINITY RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
GRAPEVINE LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1924 THRU 1962	11	6	7	9	13	16	24	30	15	5	2	6	144
FY 1965	5	2	7	16	13	35	33	37	14	0	0	2	164
RELEASES (1000 AC,FT.)													
AVG 1952 THRU 1962	4	8	12	9	6	6	10	12	15	13	11	5	111
FY 1965	4	1	1	1	1	1	1	51	10	4	4	3	82
RAINFALL (INCHES)													
AVG 1931 THRU 1960	3.13	2.19	2.24	1.90	2.26	2.26	3.83	4.46	3.28	2.56	2.48	2.78	33.43
FY 1965	7.89	3.21	4.04	0.99	2.07	4.43	4.93	4.19	4.93	1.62	0.71	3.59	42.60
DEVIATION	4.76	1.02	1.80	-0.91	-0.19	2.17	1.04	-0.27	1.65	-0.94	-1.77	0.81	9.17
POOL ELEVATION													
END OF MONTH	523.65	523.40	524.29	526.81	528.73	533.65	537.57	535.13	535.05	533.62	531.60	530.90	
MAXIMUM	523.86	523.77	524.29	526.82	528.73	533.65	537.57	537.75	536.17	535.05	533.62	531.80	
MINIMUM	523.54	523.40	523.31	524.29	526.76	528.73	533.05	535.13	535.00	533.62	531.80	530.90	
POOL CONTENT EOM (1000 AC.FT.)	170	109	113	127	139	171	200	182	181	171	159	153	

TRINITY RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
LAVON LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1924 THRU 1982	14	19	23	25	35	37	53	69	37	13	3	12	340
FY 1985	23	20	100	40	57	102	72	77	24	10	7	5	537
RELEASES (1000 AC,FT.)													
AVG 1953 THRU 1982	13	14	26	20	15	21	15	58	37	14	7	4	244
FY 1985	0	0	0	23	5	44	62	61	67	0	0	0	262
RAINFALL (INCHES)													
AVG 1931 THRU 1960	3.28	2.67	2.99	2.47	2.82	3.37	4.57	5.24	3.99	2.86	2.71	2.67	39.84
FY 1985	8.47	3.19	5.41	1.62	2.85	5.02	4.51	4.32	3.04	2.21	0.57	2.79	44.00
DEVIATION	5.19	0.32	2.42	-0.85	0.03	1.65	-0.06	-0.92	-0.95	-0.65	-2.14	0.12	4.16
POOL ELEVATION													
END OF MONTH	487.17	487.52	491.38	492.18	494.03	495.86	495.55	495.29	492.15	491.09	489.49	485.27	
MAXIMUM	487.19	487.53	491.58	492.62	494.10	495.86	495.88	496.15	495.29	492.15	491.09	489.49	
MINIMUM	486.51	487.17	487.41	491.88	492.08	493.28	493.62	494.59	492.15	491.02	489.49	483.21	
POOL CONTENT EOM (1000 AC.FT.)	361	367	454	461	502	544	537	531	460	438	405	382	

TRINITY RIVER BASIN

NAVARRO MILLS LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1908 THRU 1982	5	6	8	10	10	12	19	29	14	4	1	3	121
FY 1985	14	7	79	6	9	17	4	2	2	1	1	3	145
RELEASES (1000 AC,FT.)													
AVG 1963 THRU 1982	2	7	6	4	6	7	9	16	22	8	0	2	83
FY 1985	0	0	32	52	5	19	1	1	0	0	0	0	110
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.64	2.60	2.61	2.62	2.80	2.67	4.36	4.98	3.50	1.82	1.50	2.64	34.84
FY 1985	7.81	2.54	6.58	0.89	2.15	3.45	2.29	3.11	2.39	1.06	0.59	4.59	37.45
DEVIATION	5.17	-0.06	3.97	-1.73	-0.65	0.78	-2.07	-1.87	-1.11	-0.76	-1.01	1.95	2.61
POOL ELEVATION													
END OF MONTH	424.40	425.43	432.44	424.95	425.45	424.68	424.84	424.40	424.00	423.41	422.56	422.36	
MAXIMUM	424.42	425.44	433.56	432.65	425.54	425.82	424.84	424.86	424.40	424.40	423.41	422.56	
MINIMUM	421.92	424.40	425.43	424.95	424.53	424.68	424.60	424.40	424.00	423.41	422.55	421.94	
POOL CONTENT EOM (1000 AC.FT.)	56	62	107	59	62	58	59	56	54	52	48	47	

TRINITY RIVER BASIN

BARDWELL LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1938 THRU 1982	3	3	4	4	6	6	11	14	7	2	1	2	63
FY 1985	8	4	34	10	7	15	7	2	1	2	1	1	92
RELEASES (1000 AC,FT.)													
AVG 1965 THRU 1982	1	5	3	3	4	6	6	12	11	2	0	1	54
FY 1985	0	0	14	26	3	14	4	6	0	0	0	0	67
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.90	2.73	2.94	2.53	2.81	2.73	4.11	4.81	3.09	1.98	2.16	2.74	35.53
FY 1985	9.36	2.74	8.19	1.28	2.25	4.03	3.68	1.56	1.52	2.34	0.32	2.98	40.25
DEVIATION	6.46	0.01	5.25	-1.25	-0.56	1.30	-0.43	-3.25	-1.57	0.36	-1.84	0.24	4.72
POOL ELEVATION													
END OF MONTH	420.06	420.91	425.82	421.71	422.46	422.33	422.57	420.98	420.69	420.37	419.67	419.21	
MAXIMUM	420.09	420.92	426.57	426.04	422.48	423.30	422.57	422.64	420.98	420.69	420.37	419.67	
MINIMUM	418.07	420.06	420.91	421.30	421.10	421.93	421.26	420.97	420.69	420.32	419.67	418.95	
POOL CONTENT EOM (1000 AC.FT.)	49	52	71	55	58	57	58	52	51	50	48	46	

SAN JACINTO BASIN

BARKER RESERVOIR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac. ft.)													
Aug. 1945 thru 1985	5.87	6.06	6.10	9.46	8.02	4.12	5.13	8.05	9.75	7.37	4.20	7.55	81.68
FY 85	20.43	8.43	2.44	7.82	12.68	19.39	2.60	2.40	3.97	2.40	4.00	1.80	88.36
Releases (1000 Ac. ft.)													
Aug. 1964 thru 1985	7.13	7.47	5.64	7.90	9.07	5.56	4.22	8.98	8.96	7.36	3.90	9.14	85.33
FY 85	5.73	23.67	2.43	7.86	12.78	19.42	2.60	2.40	3.92	2.40	4.00	1.61	88.82
Rainfall (Inches)													
Aug. 1945 thru 1985	3.74	3.43	3.21	3.04	3.01	3.20	3.15	4.43	3.80	3.25	3.84	4.23	42.33
FY 85	11.19	3.00	2.28	2.77	4.10	4.60	2.27	1.62	4.97	1.86	3.91	3.60	46.17
Pool Elevation													
End of Month	89.87	73.77	79.21	74.02	81.10	74.17	73.93	73.72	73.73	74.45	73.76	81.45	
Maximum	90.17	89.81	79.21	83.08	85.84	86.70	76.44	76.92	84.26	76.33	79.34	81.45	
Minimum	73.75	73.77	73.73	73.86	73.74	73.81	73.72	73.72	73.72	73.73	73.76	73.76	
Pool Content E.O.M. (1000 Ac.Ft.)	15.10	0.00	0.02	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	.16	
ADDICKS RESERVOIR													
Inflows (1000 Ac.Ft.)													
Aug. 1948 thru 1985	6.60	6.25	6.32	6.30	7.61	3.76	5.60	8.04	7.11	5.51	5.80	6.70	75.60
FY 85	28.10	15.10	3.60	5.60	15.10	20.51	5.50	2.20	11.15	2.20	6.00	2.60	117.66
Releases (1000 Ac.Ft.)													
Aug. 1964 thru 1985	8.10	8.32	6.36	7.14	8.21	4.48	4.64	9.55	7.37	5.60	4.28	8.30	82.35
FY 85	8.10	36.00	3.40	5.80	14.74	20.91	5.50	2.20	11.10	2.20	6.00	1.91	117.88
Rainfall (Inches)													
Aug. 1948 thru 1985	3.99	3.45	3.29	3.02	3.25	2.24	3.27	4.20	3.72	3.26	3.42	4.41	41.52
FY 85	10.26	2.93	2.77	2.65	4.56	4.12	2.06	1.55	5.21	2.57	3.48	3.98	46.14
Pool Elevation													
End of Month	95.05	72.04	78.69	71.73	79.72	73.11	71.97	71.70	71.69	72.11	71.76	83.21	
Maximum	95.49	95.00	78.69	81.55	89.24	90.11	75.49	72.58	90.34	73.61	82.59	83.21	
Minimum	71.71	72.04	71.70	71.73	71.71	72.20	71.69	71.65	71.69	71.75	71.75	71.72	
Pool Content E.O.M. (1000 Ac.Ft.)	21.30	0.00	0.12	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.65	

BRAZOS RIVER BASIN

WHITNEY LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1899 THRU 1962	120	68	67	55	60	68	135	279	170	99	72	106	1301
FY 1965	24	22	52	127	36	162	135	134	112	40	32	28	504
RELEASES (1000 AC.FT.)													
AVG 1951 THRU 1962	99	57	39	51	43	55	61	216	160	83	53	71	1008
FY 1965	2	1	1	65	48	50	65	179	102	41	53	28	635
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.68	1.94	2.16	1.56	2.25	2.06	3.49	4.76	2.97	2.07	1.81	2.76	31.11
FY 1965	8.00	2.05	4.60	0.84	1.60	2.80	3.57	2.63	2.87	1.16	0.47	3.16	33.75
DEVIATION	5.12	0.11	2.44	-1.12	-0.65	0.74	0.08	-2.13	-0.10	-0.91	-1.34	0.40	2.64
POOL ELEVATION													
END OF MONTH	522.10	523.06	525.87	528.89	528.15	532.91	535.40	533.03	532.84	532.05	530.14	529.46	
MAXIMUM	522.10	523.07	525.87	529.72	528.89	532.91	535.41	535.65	534.59	532.85	532.06	530.17	
MINIMUM	520.58	522.10	523.05	525.87	527.48	528.15	532.91	532.83	532.84	531.71	530.14	529.35	
POOL CONTENT EOM (1000 AC.FT.)	413	428	476	535	520	625	686	628	623	605	562	548	

BRAZOS RIVER BASIN

AQUILLA	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1962 THRU 1962	3	1	9	3	4	11	1	1	1	0	1	1	36
FY 1965	6	1	17	6	7	16	2	1	1	1	0	3	61
RELEASES (1000 AC.FT.)													
AVG 1962 THRU 1962	0	0	0	0	0	1	3	1	0	0	0	0	5
FY 1965	0	0	0	0	0	1	5	1	0	0	0	0	7
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.75	2.40	2.75	2.30	2.70	2.40	4.25	4.50	3.15	2.00	1.75	3.00	33.95
FY 1965	9.96	2.16	5.66	1.59	2.10	4.57	1.79	3.11	2.91	1.08	0.37	3.16	38.46
DEVIATION	7.21	-0.24	2.93	-0.71	-0.60	2.17	-2.46	-1.39	-0.24	-0.92	-1.38	0.16	4.53
POOL ELEVATION													
END OF MONTH	520.54	520.85	520.06	532.55	534.85	539.14	537.69	537.40	537.14	536.59	535.75	536.02	
MAXIMUM	520.56	520.90	527.67	532.53	534.80	535.17	539.14	537.89	537.45	537.14	536.59	536.04	
MINIMUM	515.66	520.72	520.78	531.72	532.49	534.85	537.56	537.39	537.14	536.59	535.75	535.54	
POOL CONTENT EOM (1000 AC.FT.)	14	15	32	38	44	58	54	52	51	49	47	46	

BRAZOS RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
WACO LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1907 THRU 1982	25	16	20	18	24	26	47	70	31	14	8	17	316
FY 1985	33	11	38	14	14	40	21	14	19	2	0	8	214
RELEASES (1000 AC,FT.)													
AVG 1965 THRU 1982	9	14	13	16	20	29	36	75	30	16	3	5	266
FY 1985	0	0	0	18	2	34	24	11	9	2	0	0	100
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.58	2.19	2.50	2.26	2.39	2.09	3.83	4.83	2.88	2.14	1.67	3.00	32.36
FY 1985	8.04	2.56	4.97	0.49	1.69	3.27	2.74	2.38	4.07	1.37	0.68	3.16	35.42
DEVIATION	5.46	0.37	2.47	-1.77	-0.70	1.18	-1.09	-2.45	1.19	-0.77	-0.99	0.16	3.06
POOL ELEVATION													
END OF MONTH	450.23	451.21	456.17	455.25	456.45	456.71	455.75	455.39	455.78	454.66	453.14	453.26	
MAXIMUM	450.23	451.21	456.17	456.96	456.52	457.64	456.71	455.86	456.37	455.78	454.66	453.14	
MINIMUM	445.10	450.23	451.21	455.03	455.25	455.75	454.88	455.39	455.24	454.66	453.14	452.65	
POOL CONTENT EOM (1000 AC.FT.)	116	123	159	151	160	162	155	152	155	147	136	137	

BRAZOS RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
PROCTOR LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1922 THRU 1982	3	2	1	3	2	5	5	12	5	2	1	3	44
FY 1985	28	3	13	31	2	15	7	12	10	0	0	0	121
RELEASES (1000 AC,FT.)													
AVG 1963 THRU 1982	3	3	2	3	6	4	9	11	9	8	4	2	64
FY 1985	0	0	0	21	8	6	8	14	6	2	3	3	71
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.71	1.66	1.76	1.65	1.69	1.55	3.06	4.68	2.75	2.08	1.65	2.73	27.97
FY 1985	7.52	1.87	4.38	0.62	1.08	3.21	2.55	2.62	4.15	1.67	0.62	2.52	33.31
DEVIATION	4.81	0.21	3.12	-1.03	-0.61	1.66	-0.51	-2.06	1.40	-0.41	-1.03	-0.21	5.34
POOL ELEVATION													
END OF MONTH	1158.85	1159.23	1162.00	1163.88	1162.51	1164.18	1163.50	1162.34	1162.54	1161.44	1159.59	1159.23	
MAXIMUM	1158.85	1159.33	1162.00	1166.46	1163.88	1164.49	1164.18	1163.60	1163.60	1162.54	1161.44	1159.59	
MINIMUM	1149.37	1158.85	1159.18	1162.00	1162.42	1162.43	1162.55	1162.34	1162.22	1161.44	1159.59	1159.12	
POOL CONTENT EOM (1000 AC.FT.)	46	47	59	68	62	70	67	61	62	57	49	44	

BRAZOS RIVER BASIN

BELTON LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1908 THRU 1982	31	21	31	31	36	37	65	103	49	24	14	26	468
FY 1985	28	9	21	27	30	50	28	34	36	4	3	6	276
RELEASES (1000 AC,FT.)													
AVG 1954 THRU 1982	25	23	20	26	26	37	34	61	66	46	14	9	387
FY 1985	8	1	1	1	1	1	15	47	19	10	4	4	112
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.61	2.11	2.28	2.10	2.21	1.96	3.56	4.66	2.89	2.07	1.69	2.92	31.06
FY 1985	7.25	2.48	4.34	0.78	2.41	3.67	1.96	2.91	4.54	1.76	0.65	2.87	35.62
DEVIATION	4.64	0.37	2.06	-1.32	0.20	1.71	-1.60	-1.75	1.65	-0.31	-1.04	-0.05	4.56
POOL ELEVATION													
END OF MONTH	585.30	585.69	587.21	589.30	591.55	595.19	595.77	594.08	594.75	593.40	592.29	591.69	
MAXIMUM	585.32	585.70	587.21	589.30	591.55	595.19	595.77	595.79	595.95	594.75	593.40	592.29	
MINIMUM	583.65	585.24	585.67	587.21	589.30	591.55	595.19	594.08	594.02	593.40	592.29	591.69	
POOL CONTENT EOM (1000 AC.FT.)	342	347	363	386	412	457	464	443	451	435	421	414	

BRAZOS RIVER BASIN

STILLHOUSE HOLLOW LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1924 THRU 1982	14	10	12	15	22	23	26	46	21	10	5	11	215
FY 1985	10	2	6	8	12	35	21	19	25	2	1	3	144
RELEASES (1000 AC,FT.)													
AVG 1968 THRU 1982	8	7	9	13	13	16	21	35	25	23	3	6	179
FY 1985	0	0	0	0	0	0	13	31	21	0	0	0	65
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.78	2.16	2.33	2.02	2.13	1.84	3.35	4.42	2.99	1.98	1.92	3.11	31.03
FY 1985	7.08	2.55	3.71	1.05	2.57	3.72	2.53	3.00	3.68	0.44	0.95	3.18	34.46
DEVIATION	4.30	0.39	1.38	-0.97	0.44	1.88	-0.82	-1.42	0.69	-1.54	-0.97	0.07	3.43
POOL ELEVATION													
END OF MONTH	613.85	614.02	614.84	616.17	618.12	623.41	624.22	622.04	622.02	621.55	620.79	620.66	
MAXIMUM	613.85	614.02	614.84	616.17	618.12	623.41	624.27	624.34	624.93	622.05	621.55	620.80	
MINIMUM	612.18	613.79	614.00	614.84	616.17	618.12	622.81	622.04	622.00	621.55	620.79	620.43	
POOL CONTENT EOM (1000 AC.FT.)	187	188	193	200	212	245	250	236	236	233	228	227	

BRAZOS RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
GEORGETOWN LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1980 THRU 1982	4	2	1	1	1	1	2	14	27	3	1	9	66
FY 1985	6	1	5	7	10	28	8	6	2	0	0	0	73
RELEASES (1000 AC,FT.)													
AVG 1980 THRU 1982	3	2	1	0	0	0	1	4	13	16	1	9	50
FY 1985	0	0	6	3	4	36	8	6	1	0	0	0	64
RAINFALL (INCHES)													
AVG 1931 THRU 1960	3.16	2.50	2.38	2.16	2.37	2.03	3.61	4.01	2.89	1.77	2.12	3.46	32.46
FY 1985	8.73	2.12	3.12	1.16	3.39	3.71	1.95	3.30	2.55	1.01	1.22	4.03	36.29
DEVIATION	5.57	-0.38	0.74	-1.00	1.02	1.68	-1.66	-0.71	-0.34	-0.76	-0.90	0.57	3.83
POOL ELEVATION													
END OF MONTH	791.92	792.23	791.47	794.25	798.37	792.53	791.73	791.05	791.23	790.38	789.21	788.51	
MAXIMUM	791.92	792.23	792.28	794.25	798.37	798.63	792.53	792.85	791.47	791.23	790.38	789.21	
MINIMUM	787.19	791.88	790.85	791.05	794.25	792.53	791.05	791.04	791.01	790.38	789.21	788.40	
POOL CONTENT EOM (1000 AC.FT.)	38	39	38	41	48	39	38	37	37	36	35	34	

BRAZOS RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
GRANGER LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1980 THRU 1982	10	8	4	4	5	7	9	24	63	22	4	19	179
FY 1985	35	8	21	17	39	48	25	24	10	4	2	2	235
RELEASES (1000 AC,FT.)													
AVG 1980 THRU 1982	9	8	2	2	2	1	5	13	35	45	4	18	144
FY 1985	2	19	13	10	10	70	26	30	8	2	0	0	195
RAINFALL (INCHES)													
AVG 1931 THRU 1960	3.16	2.50	2.38	2.16	2.37	2.03	3.61	4.01	2.89	1.77	2.12	3.46	32.46
FY 1985	10.14	2.05	3.58	1.17	3.24	3.10	2.56	3.60	3.17	1.01	0.73	3.37	37.72
DEVIATION	6.98	-0.45	1.20	-0.99	0.87	1.07	-1.05	-0.41	0.28	-0.76	-1.39	-0.09	5.26
POOL ELEVATION													
END OF MONTH	506.60	504.00	504.47	505.77	511.06	506.73	506.10	504.30	504.21	504.13	503.67	503.50	
MAXIMUM	506.67	506.60	506.76	505.77	511.28	511.14	506.73	507.20	504.82	504.23	504.13	503.67	
MINIMUM	498.54	503.94	503.87	503.78	505.77	506.73	504.01	504.29	504.19	504.12	503.67	503.36	
POOL CONTENT EOM (1000 AC.FT.)	78	66	68	74	102	78	75	67	66	66	64	63	

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
SOMERVILLE LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1924 THRU 1982	13	14	17	22	23	19	29	38	22	12	3	10	222
FY 1985	45	23	39	31	38	36	6	11	5	2	1	4	241
RELEASES (1000 AC,FT.)													
AVG 1967 THRU 1982	11	12	14	9	17	16	22	33	33	21	5	5	198
FY 1985	0	0	18	37	14	46	8	8	1	4	3	0	139
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.66	3.10	3.15	2.89	2.87	2.44	3.71	3.95	3.43	2.35	2.45	3.09	36.09
FY 1985	12.04	2.39	4.46	1.65	2.76	3.02	2.09	3.20	2.33	1.36	0.77	4.24	40.31
DEVIATION	9.38	-0.71	1.31	-1.24	-0.11	0.58	-1.62	-0.75	-1.10	-0.99	-1.68	1.15	4.22
POOL ELEVATION													
END OF MONTH	235.34	237.18	238.86	238.14	239.98	238.90	238.38	238.19	237.98	237.08	236.08	235.86	
MAXIMUM	235.34	237.18	239.64	239.59	240.04	240.10	238.90	238.51	238.19	237.99	237.08	236.00	
MINIMUM	230.70	235.34	237.17	238.14	238.06	238.06	238.16	239.19	237.98	237.08	236.08	235.57	
POOL CONTENT EOM (1000 AC.FT.)	131	151	170	162	184	171	164	162	160	150	139	137	

COLORADO RIVER BASIN

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
TWIN BUTTES LAKE													
INFLOWS (1000 AC.FT.)													
AVG 1963 THRU 1982	4	2	2	2	2	2	3	5	2	1	4	5	34
FY 1985	1	1	1	1	1	1	0	1	0	1	0	0	8
RELEASES (1000 AC.FT.)													
AVG 1963 THRU 1982	2	2	2	2	2	2	4	6	4	6	4	2	38
FY 1985	1	1	1	0	0	0	0	0	1	1	1	0	6
RAINFALL (INCHES)													
AVG 1931 THRU 1960	1.81	0.76	0.91	0.89	0.83	0.83	1.74	2.89	1.83	1.74	1.45	2.37	19.05
FY 1985	3.55	1.43	3.29	0.88	0.80	1.27	1.41	4.19	2.75	1.82	0.51	3.79	25.69
DEVIATION	1.74	0.67	2.38	-0.01	-0.03	0.44	-0.33	1.30	0.92	0.08	-0.94	1.42	7.64
POOL ELEVATION													
END OF MONTH	1898.52	1898.62	1899.37	1900.29	1900.93	1901.54	1900.98	1901.47	1900.26	1899.26	1897.14	1896.47	
MAXIMUM	1898.52	1898.62	1899.44	1900.29	1900.93	1901.54	1901.54	1901.50	1901.47	1900.26	1899.29	1897.46	
MINIMUM	1897.96	1898.50	1898.62	1899.44	1900.29	1900.93	1900.98	1900.66	1900.11	1899.01	1897.16	1896.03	
POOL CONTENT EOM (1000 AC.FT.)	20	20	21	23	25	26	24	25	23	21	18	17	

COLORADO RIVER BASIN

O.C.FISHER LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1915 THRU 1932	4	0	0	0	1	1	4	6	3	3	1	7	30
FY 1935	1	0	1	0	0	0	0	0	0	0	0	1	3
RELEASES (1000 AC,FT.)													
AVG 1953 THRU 1932	2	0	0	0	0	0	0	0	0	1	0	0	3
FY 1935	0	0	0	0	0	0	0	0	0	0	1	1	2
RAINFALL (INCHES)													
AVG 1931 THRU 1960	1.88	0.75	1.04	0.84	0.84	0.86	1.59	2.71	1.91	2.09	1.65	2.18	18.34
FY 1985	3.81	1.94	2.75	0.72	0.78	1.22	0.85	2.61	2.67	1.84	0.63	3.09	22.91
DEVIATION	1.93	1.19	1.71	-0.12	-0.06	0.36	-0.74	-0.10	0.76	-0.25	-1.02	0.91	4.57
POOL ELEVATION													
END OF MONTH	1874.03	1873.57	1873.72	1873.71	1873.75	1873.68	1873.22	1872.41	1871.58	1870.27	1868.72	1868.39	
MAXIMUM	1874.22	1874.04	1873.72	1873.74	1873.75	1873.76	1873.68	1873.22	1872.41	1871.58	1870.27	1868.72	
MINIMUM	1873.96	1873.57	1873.47	1873.71	1873.66	1873.68	1873.14	1872.41	1871.57	1870.27	1868.72	1867.78	
POOL CONTENT EOM (1000 AC.FT.)	15	14	14	14	14	14	14	13	12	10	9	9	

COLORADO RIVER BASIN

HORDS CREEK LAKE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1942 THRU 1932	0	0	0	0	0	0	1	1	0	0	0	0	2
FY 1935	0	0	0	0	0	0	0	0	0	0	0	0	0
RELEASES (1000 AC,FT.)													
AVG 1953 THRU 1932	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 1935	0	0	0	0	0	0	0	0	0	0	0	0	0
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.49	1.31	1.44	1.56	1.29	1.25	2.90	4.49	2.73	2.38	1.94	3.04	26.82
FY 1985	6.09	1.79	3.70	0.32	0.70	2.07	1.48	1.53	3.45	1.15	1.36	4.21	27.85
DEVIATION	3.60	0.48	2.26	-1.24	-0.59	0.82	-1.42	-2.96	0.72	-1.23	-0.58	1.17	1.03
POOL ELEVATION													
END OF MONTH	1878.12	1878.14	1880.22	1880.36	1880.40	1880.63	1830.21	1879.75	1879.46	1878.95	1878.12	1879.75	
MAXIMUM	1878.12	1879.24	1880.22	1880.45	1890.41	1880.64	1880.66	1880.21	1879.92	1879.46	1878.95	1879.76	
MINIMUM	1876.98	1878.01	1878.04	1880.22	1880.34	1880.32	1880.21	1979.75	1879.42	1878.95	1878.12	1877.92	
POOL CONTENT EOM (1000 AC.FT.)	2	2	2	2	2	2	2	2	2	2	2	2	

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
MARSHALL FORD													
INFLOWS (1000 AC.FT.)													
AVG 1941 THRU 1982	127	63	52	76	81	85	125	237	165	97	86	108	1302
FY 1985	15	28	119	218	97	118	57	46	50	41	41	42	872
RELEASES (1000 AC,FT.)													
AVG 1944 THRU 1982	69	65	50	48	55	69	98	175	173	130	118	80	1130
FY 1985	13	7	4	3	4	60	69	90	106	96	109	71	632
RAINFALL (INCHES)													
AVG 1931 THRU 1960	2.39	1.46	1.42	1.13	1.18	1.27	2.46	3.27	2.50	2.02	2.03	2.76	23.89
FY 1985	6.02	1.99	4.32	0.85	1.44	2.44	1.61	2.95	3.41	1.57	0.74	3.45	30.79
DEVIATION	3.63	0.53	2.90	-0.28	0.26	1.17	-0.85	-0.32	0.91	-0.45	-1.29	0.69	6.90
POOL ELEVATION													
END OF MONTH	649.02	650.37	658.76	672.48	677.65	680.55	679.54	676.62	672.90	668.91	663.71	661.21	
MAXIMUM	649.02	650.37	658.76	672.48	677.65	680.77	680.55	679.54	677.17	672.90	668.91	663.71	
MINIMUM	636.58	649.02	650.37	658.76	672.43	677.65	679.45	676.62	672.88	668.41	663.71	661.12	
POOL CONTENT EOM (1000 AC.FT.)	677	694	807	1019	1109	1163	1144	1091	1026	960	879	842	

CANYON LAKE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
INFLOWS (1000 AC.FT.)													
AVG 1915 THRU 1962	31	16	17	20	21	23	31	40	30	22	18	27	296
FY 1985	17	9	22	71	38	56	36	37	103	46	13	16	464
RELEASES (1000 AC.FT.)													
AVG 1964 THRU 1982	17	17	12	14	18	19	21	26	30	22	27	17	240
FY 1985	8	16	18	48	33	51	44	32	34	46	23	10	365
RAINFALL (INCHES)													
AVG 1931 THRU 1960	3.05	1.67	2.18	2.07	2.20	2.00	3.00	4.03	2.98	2.40	2.07	4.02	31.67
FY 1985	8.13	2.02	4.93	1.53	2.62	2.98	1.95	2.76	6.47	3.59	0.65	5.34	42.97
DEVIATION	5.08	0.35	2.75	-0.54	0.42	0.98	-1.05	-1.27	3.49	1.19	-1.42	1.32	11.30
POOL ELEVATION													
END OF MONTH	901.18	899.91	900.25	903.22	903.74	904.15	902.73	902.83	910.95	910.09	908.06	908.21	
MAXIMUM	901.28	901.18	900.49	904.92	903.74	904.26	904.15	903.37	911.11	911.73	910.09	908.21	
MINIMUM	900.23	899.85	899.70	900.25	902.03	903.53	902.71	902.36	902.40	910.09	908.06	907.78	
POOL CONTENT EOM (1000 AC.FT.)	321	312	314	336	340	343	332	333	393	391	374	376	

SLATED RESERVOIR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft) FY 1985	1.24	.48	.47	.34	.06	.28	2.66	9.59	26.16	10.41	2.73	1.95	56.37
Releases (1000 Ac-Ft) FY 1985	1.27	.44	.51	.27	.17	.47	5.76	9.38	12.25	11.35	2.58	1.95	46.40
Rainfall (Inches) (DATA IS NOT AVAILABLE DURING THE WINTER MONTHS)													
FY 1985	1.26	N/A	N/A	N/A	N/A	N/A	N/A	.56	1.10	2.74	2.45	0	N/A
Pool Elevation(EOM)	10004.2	10004.3	10004.2	10004.4	10004.2	10003.7	9995.0	9995.6	10029.4	10027.3	10027.5	10027.5	
Maximum	10004.6	10004.4	10004.4	10004.4	10004.4	10004.7	10007.0	10000.7	10031.5	10028.6	10027.7	10027.8	
Minimum	10004.0	10004.2	10004.2	10003.9	10003.6	10003.7	9994.9	9989.8	9995.5	10027.4	10027.4	10027.4	
Pool Content (EOM) (1000 Ac-Ft)	34.02	34.10	34.02	34.17	34.02	33.65	27.51	27.91	55.26	53.32	53.50	53.50	

ABIQUIU DAM

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1962 thru 1985	11.44	13.32	11.87	4.87	8.90	18.77	48.32	95.15	53.30	26.16	26.08	17.98	336.18
FY 1985	12.45	17.31	19.82	22.96	27.14	69.11	142.60	236.10	50.61	9.73	10.80	7.84	626.46
Releases (1000 Ac-Ft)													
Avg 1963 thru 1985	10.30	22.36	22.48	8.55	6.31	17.24	41.63	67.52	59.55	32.65	22.97	15.77	327.33
FY 1985	12.26	10.40	14.20	13.26	14.00	62.39	109.31	91.20	30.87	20.79	25.58	29.82	434.10
Rainfall (Inches)													
Avg 1957 thru 1985	.94	.48	.38	.37	.26	.59	.54	.75	.65	1.62	1.88	1.18	9.65
FY 1985	1.68	.07	.61	.76	.50	1.14	2.46	1.93	.85	.82	1.04	1.65	13.51
Pool Elevation (EOM)	6206.53	6208.22	6209.63	6211.63	6214.94	6216.26	6223.90	6252.10	625.48	6252.39	6249.25	6244.81	
Maximum	6206.73	6208.22	6209.63	6211.63	6215.28	6219.89	6223.90	6252.10	6256.22	6254.81	6252.42	6248.91	
Minimum	6206.36	6206.48	6208.31	6209.69	6211.80	6215.13	6216.21	6224.82	6252.78	6252.38	6249.25	6244.79	
Pool Content (EOM) (1000 Ac-Ft)	148.02	154.16	159.32	166.82	179.52	184.74	216.40	358.60	374.60	360.24	342.35	317.86	

1
Data for compiling averages unavailable

COCHITI LAKE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1910 thru 1985	48.19	53.66	48.37	40.29	44.92	78.52	135.75	272.25	204.05	84.70	57.03	43.55	1110.63
FY 1985	42.64	57.18	59.76	56.84	46.05	150.52	393.96	500.70	362.74	99.72	59.56	53.07	1832.75
Releases (1000 Ac-Ft)													
Avg 1975 thru 1985	34.58	49.82	53.70	41.42	39.85	70.36	134.95	244.94	228.40	126.50	52.30	44.04	1120.85
FY 1985	42.53	56.84	59.52	52.97	49.62	129.52	380.01	375.36	282.29	198.18	58.78	52.106	1737.73
Rainfall (Inches)													
Avg 1967 thru 1985	1.04	.62	.65	.64	.38	.73	.66	.90	.67	1.79	2.29	1.47	11.84
FY 1985	3.39	.36	2.14	.61	.62	3.05	3.45	.81	.51	2.31	2.37	1.77	21.39
Pool Elevation (EOM)	5327.48	5327.51	5327.55	5330.55	5327.46	5342.17	5349.95	5394.75	5413.29	5388.00	5387.52	5387.34	
Maximum	5327.79	5332.24	5327.82	5331.89	5329.44	5342.17	5349.95	5394.75	5413.47	5412.88	5388.26	5387.57	
Minimum	5327.44	5327.08	5327.25	5327.50	5327.44	5327.51	5329.92	5350.90	5395.60	5388.00	5387.52	5386.89	
Pool Content (EOM) (1000 Ac-Ft)	47.21	47.25	47.29	51.00	47.19	67.61	80.88	204.51	281.88	180.70	179.08	178.47	

GALISTEO DAM

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1971 thru 1985													
FY 1985	INFLOW = OUTFLOW												
Releases (1000 Ac-Ft)													
Avg 1971 thru 1985	.37	.06	.08	.07	.08	.13	.21	.32	.26	1.25	1.07	.72	4.60
FY 1985	.27	.11	.35	.08	.05	.57	.90	2.38	.19	.48	.11	.21	5.74
Rainfall (Inches)													
Avg 1971 thru 1985	1.01	.55	.39	.50	.50	.50	.70	.88	.38	1.34	1.42	1.22	9.38
FY 1985	3.94	.50	2.21	.78	2.04	1.57	3.71	1.09	.54	2.87	.77	1.80	21.82
Pool Elevation (EOM)	NO END OF MONTH STORAGE DURING THE YEAR												
Maximum													
Minimum													
Pool Content (EOM) (1000 Ac-Ft)	0	0	0	0	0	0	0	0	0	0	0	0	

JEMEZ CANYON DAM

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1953 thru 1985	2.30	1.73	1.55	1.63	1.89	4.33	18.38	15.53	2.93	1.15	2.40	1.51	54.52
FY 1985	3.83	2.37	3.06	2.42	2.04	16.12	55.58	35.21	6.19	2.09	2.52	4.43	135.87
Releases (1000 Ac-Ft)													
Avg 1954 thru 1985	1.68	1.83	1.31	1.49	1.69	3.79	11.50	12.93	5.71	2.42	2.85	1.18	48.39
FY 1985	3.31	2.06	0	0	0	14.49	48.29	21.15	5.20	2.02	2.53	4.23	103.30
Rainfall (Inches)													
Avg 1953 thru 1985	1.00	.44	.44	.40	.36	.50	.39	.64	.46	1.30	1.57	1.16	8.64
FY 1985	2.39	.49	1.33	.65	.35	1.31	2.10	.72	.57	1.42	.56	1.99	13.88
Pool Elevation (EOM)	5162.61	5163.21	5169.70	5174.11	5176.94	5178.60	5185.98	5196.91	5196.85	5196.12	5195.22	5194.67	
Maximum	5164.17	5163.21	5169.70	5174.11	5176.94	5179.72	5185.98	5196.91	5197.05	5197.04	5196.72	5196.11	
Minimum	5161.44	5162.32	5163.39	5169.85	5174.13	5177.00	5177.60	5186.72	5196.72	5196.12	5195.22	5194.67	
Pool Content (EOM) (1000 Ac-Ft)	2.80	3.01	6.00	6.41	8.31	9.58	16.40	29.66	29.58	28.57	27.35	26.62	

SANTA ROSA LAKE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1981 thru 1985	2.08	1.25	1.32	1.31	.98	3.93	8.89	21.08	17.09	7.63	16.74	7.00	89.32
FY 1985	3.15	2.20	2.18	2.28	1.06	12.83	26.53	44.36	29.90	5.90	4.20	5.50	140.10
Releases (1000 Ac-Ft)													
Avg 1981 thru 1985	.44	.25	.26	.20	.22	.16	.14	6.57	12.50	18.52	11.91	8.95	60.13
FY 1985	.10	.18	.16	.10	.10	.12	.16	.97	21.76	7.11	14.38	.13	45.27
Rainfall (Inches)													
Avg 1981 thru 1985	1.71	.77	.74	.50	.26	.71	.70	.99	1.64	1.87	3.75	1.60	15.23
FY 1985	3.03	1.55	1.73	.18	.09	1.67	1.93	.66	1.02	1.08	1.70	1.63	16.27
Pool Elevation (EOM)	4708.95	4710.45	4711.94	4713.46	4713.95	4721.43	4732.68	4745.57	4746.51	4745.50	4742.03	4743.02	
Maximum	4708.95	4710.50	4711.94	4713.46	4713.95	4721.43	4732.68	4745.57	4746.51	4746.65	4745.76	4743.07	4746.65
Minimum	4706.25	4708.95	4710.45	4712.06	4713.46	4713.97	4721.59	4732.99	4745.36	4745.01	4742.00	4741.94	4706.25
Pool Content (EOM) (1000 Ac-Ft)	19.42	21.09	22.85	24.78	25.43	37.36	62.70	104.12	107.70	103.86	91.34	94.81	

TWO RIVERS RESERVOIR

RIO GRANDE RESERVOIR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Inflows (1000 Ac-Ft)													
Avg 1964 thru 1985	.40	.52	.53	.60	.40	.51	.74	.68	.36	.30	1.25	1.43	7.74
FY 1985	.06	.51	5.60	6.18	4.09	5.61	5.55	1.99	.57	0	.07	.26	30.52
Releases (1000 Ac-Ft)													
Avg 1964 thru 1985	.40	.52	.51	.60	.40	.50	.74	.68	.36	.30	1.21	1.43	9.16
FY 1985	.06	.51	5.30	6.40	4.15	5.58	5.55	1.99	.57	0	.07	.26	61.21
Rainfall (Inches)													
Avg 1964 thru 1985	.90	.39	.18	.19	.29	.23	.36	.70	1.32	1.78	2.83	1.88	10.78
FY 1985	3.29	1.40	.98	.60	.03	.81	.20	1.80	.14	3.08	.91	2.41	15.65
Pool Elevation(EOM)	NO END OF MONTH STORAGE DURING THE YEAR												
Maximum			3984.51	3981.44	3979.58	3979.80							
Minimum													
Pool Content (EOM)	0	0	.29	.06	0	0	0	0	0	0	0	0	

SUMNER LAKE

Data Unavailable

SECTION VIII - MINUTES OF THE TRINITY RIVER BASIN INTERESTS GROUP AND THE ANNUAL SWD WATER MANAGEMENT PERSONNEL MEETING

1. RESERVOIR CONTROL CENTER
2. HYDRAULICS CONFERENCE

MINUTES
1985 ANNUAL MEETING
RESERVOIR CONTROL CENTER
CORPS OF ENGINEERS
12-13 NOVEMBER 1985

1. INTRODUCTION. The 1985 Arnual Reservoir Control Center (RCC) Meeting was held on 12-13 November 1985 in Dallas, Texas. Mr. Charles Sullivan, Chief of the RCC, gave the welcoming and introductory remarks. The agenda and attendance list are enclosed as attachments 1 and 2, respectively.

2. DISTRICT STATUS REPORTS.

a. Tulsa District. Mr. Ross Copley reported the district's activities for the past year. He stated that district river basins experienced a wet year with flows exceeding normal. There were few deviations requested. Record pool levels were established at several of the district lakes. Twenty of the district's 35 projects were surveyed for water quality. Several sediment surveys were initiated and completed during the past fiscal year. Navigation activities were down 16% from last year. Hydropower production was up and resulted in the best production of energy in the last five years. Attendance at district lakes remained about the same as for the past year.

b. Little Rock District. A wet year was experienced throughout the district as reported by Mr. James Proctor. The White River Basin experienced the largest volume of water since construction of the Corps projects. The Arkansas River passed the largest amount of flood water since 1973. Special problems occurred at Gillham due to vibration in the gate tower at certain settings of the conduit gates. At this time, the cause of the vibration has not been clearly defined. Dredging along the lower Arkansas Navigation Channel was about twice the normal. Only a few deviations were requested for the year; however, few but for long durations. Deviations on the Arkansas River were mainly due to high flows which created shoaling problems. Navigation tonnage was down for the past year. Hydropower production was up because of high flows on the White River. Lake visitation and other programs were about average for the year.

c. Albuquerque District. Mr. Dick Kreiner summarized the district activities. The past year was one of the busiest years for reservoir regulation activities. Snowmelt runoff was well above normal for many areas. Special flood control operations were conducted at Abiquiu, Cochiti, and Jemez Canyon to allow for flood space in Elephant Butte Reservoir for downstream protection. Record pool levels in these upper basin reservoirs caused some problems in recreation. Carryover flood water in

storage is currently 260,000 acre-feet. The district is required to evacute this storage prior to 31 Mar 86. Releases from Cochiti were deviated from the approved plan five times during the year. Purpose of the deviations ranged from channel maintenance to aerial surveys. In the Pecos river basin, Santa Rosa filled to its maximum conservation level for the first time. Dam failure exercises were conducted on 18 September 1985 and Dick expects these to be continued in the future.

d. Galveston District. Mr. Charles Scheffler reported that the district experienced, overall, some extremely dry periods during the year. On those occasions when releases were made from Addicks and Barker Reservoirs, no downstream problems were experienced. A sediment policy was established by the district to provide guidance on control methods on inflowing streams to reduce velocity and sediment deposition.

e. Fort Worth District. Flood control operations were frequent during the winter and spring months; however, no unusal operations were required as stated by Mr. Arnoldo Escobar. Twenty-seven deviatons from the approved plans of regulation were requested and approved. About $15 million in flood damages were prevented by the Corps Projects during the past year. There were no sediment resurveys made during the year and water quality activities were about normal.

3. OPERATING AGREEMENT(S) FOR NON-FEDERAL HYDROPOWER PLANTS AT CORPS PROJECTS. Mr. Ralph Garland discussed the requirements and approval of regulating plans (Ref. M/L, DAEN-ECZ-B, 26 Nov 84, subject: Non-Fede.al Hydropower Development at Corps of Engineers Projects) describing regulation requirements during construction and the mode of hydropower operations after construction. A copy of a previously developed agreement for Lock and Dam No. 13, Arkansas River was given to each participant for future reference.

4. COOPERATIVE STREAM GAGING PROGARM WITH THE USGS:

a. Mr. Ralph Hight stated that their proposal for contracting out work for stream gaging, etc. has progressed to the point where the district is reviewing proposed agreements.

b. District Review of program in accordance with M/L (DAEN-CWH-W) of 18 Sep 85, subject: Cooperative Stream Gaging Program Update. Each district is expected to hold meetings with respective USGS District offices to discuss items of concern. The SWDO should be informed of meetings in order that a representative may attend.

5. WCDS USER GROUP: Mr. John Parks gave an update on exchange and transfer of data between the River Forecast

Centers located in Ft. Worth, TX and in Tulsa, OK and the SWD Water Control Data System (WCDS). John asked each to review their ground receive self-timed transmissions.

a. Contracting for GOES Data: Mr. Sullivan reported that a contract is currently being prepared for data handling, etc. either with the prospective contractor using our ground receive station or their facilities. The contract is expected to be completed within 90 days.

b. Contracting for Software Documentation. Mr. Sullivan stated that discussions have taken place with the University of Texas at Arlington, TX (UTA) for the possibility of them documenting the software that is currently in use for the ground receive station. GSA is also being considered. GSA has an open-end contract for overall ADP work, i.e., software development. In addition to software documentation, additional routines for data handling and maintenance will be developed by the contractor.

c. Total Data Base Configuration. Mr. Jim McCoy of the Tulsa District gave a progress report on the data base development and requested that each district review their daily reservoir file. Jim also asked that the review be completed by 1 Jan 86. At this point, Mr. Sullivan suggested the daily reservoir file be provided to each district Chief, Reservoir Control Section for their lead in the review of the daily reservoir file.

d. District Proposal For Contracting During FY-86. None of the districts had plans for contracting out work during the up-coming fiscal year.

6. SYSTEM REGULATION STUDIES.

a. Funding of the Hydrologic Modeling Center (HMC). Mr. Hight, Chief, HMC, stated that the HMC is currently being funded directly by the requester for service. However, future funding may be provided through central controls.

b. Detailed Plans for Studies in FY-86. The following studies are planned for FY-86

- BRAZOS RIVER BASIN
- WHITE RIVER BASIN
- RED RIVER BASIN

c. Projected Studies Through FY-89. Topic was not discussed.

7. WATER CONTROL MANUALS.

a. Manual Development Over the Past Three Years. Mr. Terry Coomes emphasized the importance of having complete and up-to-date Water Control Manuals. He requested that all project manuals be completed within the next three years. With the anticipated O&M budget reduction, it becomes more imperative to complete manuals as quickly as possible. Manuals for Section 7 Projects should also be expedited. He encouraged contracting out work where in-house manpower is a shortage. Some districts are currently contracting work with some degree of success.

b. The following table provides the No. of manuals requiring updating, new projects without or incomplete manuals, and those with outstanding comments.

DISTRICT	MANUALS NEEDING UPDATING	NEW PROJECTS WITHOUT OR INCOMPLETE MANUALS	MANUALS WITH OUTSTANDING COMMENTS
ALBUQUERQUE	3	1	0
FORT WORTH	8	3	3
GALVESTON	2	0	0
LITTLE ROCK	26	0	2
TULSA	21	3	1

c. Detailed Manual Schedule For FY-86. At the end of the fiscal year, each District is required to submit to the Division office a manual schedule for the upcoming three fiscal years. Mr. Coomes advised that these schedules will be checked more closely and that they must be realistic. SWDO will review each District's schedule and respond with comments where necessary.

8. REVIEW PROCEDURES FOR NON-FEDERAL HYDROPOWER DEVELOPMENT. This item was added due to questions asked about review procedures. Mr. Garland asked those who had questions concerning SWD's procedures for review and processing of FERC permits and licenses to refer to SWD guidance letter of 14 Dec 82 and ER 1110-2-1454. The latter provides written instructions along with flow charts detailing timeframes for review, features the Corps should review, meetings, inspections, etc. The SWD guidance letter is currently undergoing some minor revisions and will be reissued in the near future. Mr. William Johnson who has been appointed as the Coordinator of non-Federal development activities after issuance of license summarized SWD procedures for review of design documents, plans and specs, funding, agreements, etc.

1985

ANNUAL REPORT

RESERVOIR CONTROL CENTER

SOUTHWESTERN DIVISION

AGENDA

1985 ANNUAL MEETING - RESERVOIR CONTROL CENTER

SOUTHWESTERN DIVISION
CORPS OF ENGINEERS

12-13 November 1985

I. INTRODUCTION.

II. DISTRICT STATUS REPORT.

III. OPERATING AGREEMENT(S) FOR NON-FEDERAL HYDROPOWER PLANTS AT CORPS PROJECTS.

IV. COOPERATIVE STREAM GAGING PROGRAM WITH THE USGS.

a. Status of Tulsa District's proposal for contracting of work, etc.

b. District review of their program in accordance with M/L (DAEN-CWH-W) of 18 September 1985; subject: Cooperative Stream Gaging Program Update.

V. WCDS USER GROUP.

a. Contracting for GOES Data.
b. Contracting for Software Documentation.
c. Total Data Base Configuration.
d. District Proposal for Contracting During FY-86.

VI. SYSTEM REGULATION STUDIES.

a. Funding of the Hydrologic Modeling Center.
b. Detailed Plans for Studies in FY-86.
c. Projected Studies Through FY-89.

VII. WATER CONTROL MANUALS.

a. Manual Development Over the Past Three Years.
b. Number of Manuals Needing Update.
c. Number of New Projects Without or Incomplete Manuals.
d. Manuals with Outstanding Comments.
e. Detailed Manual Schedule for FY-86.

VIII. ADJOURN.

Atch 1

9. CLOSING. In closing the meeting, Mr. Coomes informed the districts that a canvass would be made to identify water control manual development that is currently being done through the use of contracts. The canvass should identify the name of the contractor, type contract (Open-End), authority for contracting, success with contractor, and amount of work remaining on contract. Some concern was expressed for the ability of the districts to develop the number of manuals that are being asked to be done within the next three years and also expressed concern for possible delays due to the number of manuals that SWDO would have to review. It was recommended that SWDO consider holding future Annual Meetings at other locations such as District Offices and Waterways Experiment Station (WES). It was agreed and the recommendation will be taken under consideration.

1985 ANNUAL MEETING
RESERVOIR CONTROL CENTER
CORPS OF ENGINEERS
12-13 NOVEMBER 1985

ATTENDANCE LIST

NAME	ORGANIZATION
RALPH GARLAND	SWDED-WR
RALPH HIGHT	SWTED-HS
CHARLES SULLIVAN	SWDED-WR
JOHN R. PARKS	SWDED-WR
JAMES A. PROCTOR	SWLED-HR
CARROLL SCOGGINS	SWTED-H
WILLIAM E. ISAACS	SWLED-H
DICK KREINER	SWAED-PH
CHARLES SCHEFFLER JR.	SWGED-HC
DOUGLAS PERRIN	SWFED-HR
ARNOLDO ESCOBAR	SWFED-HL
ROSS COPLEY	SWTED-HR
CLIFFORD VICTORY	SWDED-WR
WILLIAM JOHNSON (PART-TIME)	SWDED-TC
TERRY COOMES (PART-TIME)	SWDED-W
JIM McCOY (PART-TIME)	SWDED-HS

Atch 2

MINUTES
1985 ANNUAL HYDRAULICS MEETING
SOUTHWESTERN DIVISION - CORPS OF ENGINEERS

1. INTRODUCTION. The Annual Hydraulics Meeting was held in the Southwestern Division office (SWD) in Dallas, Texas on 14 November 1985. The purpose of the meeting was to consider the general status of hydraulics within the SWD district offices, and to share some of the more significant hydraulic endeavors now underway. Representatives came from each office. Attachment 1 is a complete attendance list. Mr. Terry Coomes welcomed the guests, explained the meeting purpose, and turned the meeting over to Mr. Tasso Schmidgall, the first speaker. Attachment 2 is a complete schedule of the meeting topics and their presenters. Following is a summary of the presentations and discussions under each topic.

2. GENERAL STATUS OF HYDRAULICS IN SWD:

a. Anticipated Workload - Type of Work. Data were presented on the hydraulics workload in SWD over the past 11 years. The annual workload figures were based on the number of items reviewed by the SWD Hydraulics Section. From a total of 295 items in 1975, the workload generally decreased to a total of 190 items in 1981. Since then, the workload has increased to a total of 325 items in 1984 and an anticipated 315 items in 1985. The significant workload increase over the past three years has been attributable to the Corps review efforts for the Non-Federal Hydropower development efforts at existing Corps projects.

b. Over the past 11 years, the hydraulics workload generally has shifted from large detention type projects to local channelization and levee projects for meeting flood control needs. Hydropower development is anticipated to continue over the next few years. Another ongoing area of potential workload increase is the rehabilitation of existing projects.

c. Organization and Workforce. Data were presented on the varying organizational arrangements of hydraulics units within the district and division offices. Hydraulics is generally a unit or section within a Hydraulics-Hydrology (H-H) or Water Management Branch. However, in the Albuquerque District it is located within the Planning Branch. In all offices, the Hydraulics Units are located in the same branch as the Hydrology and the Reservoir Control Units.

d. The numbers of engineers and total personnel in the Hydraulics Unit of each office were reported to be as follows:

OFFICE	ENGINEERS	TOTAL PERSONNEL
AD	4	4
FWD	9	15
GD	4	4
LRD	10	14
TD	4	7

e. When questioned, the attendees indicated no particular problems with the size of the hydraulics staffs. Some offices have a problem of losing younger engineers to other sections within and outside the office. Some foresee a real problem with the large gap in the age and experience of their staffs as the older engineers retire. The lack of new work on major hydraulic structures is diminishing the expertise required to resolve potential future problems with existing projects. Reliably predicting staff needs for future workloads is difficult under the current water resources development climate.

3. NON-FEDERAL HYDROPOWER DEVELOPMENT AT CORPS DAMS:

a. General. Mr. David Brown explained that the Federal Energy Regulatory Commission (FERC) has granted 10 licenses for hydropower facilities development at existing SWD dams. An additional 9 applications affecting 8 other SWD dams are pending.

b. District Experiences. Messrs. Gist Wilbur, Ron Turner and Justice Edge shared their experiences with the non-federal project licensees and the engineering firms which were retained to develop the power plant designs. The type of problems encountered have included inadequate design analysis and detailing, deficiencies in the testing procedures and conclusions of hydraulic laboratory model studies, and inadequate provisions for potential hydraulic problems such as adverse flow patterns, scour potential, pressure fluctuations, cavitation potential, and flow surging. Specific project features which involved hydraulic problems have included cofferdams, approach walls, trash racks, junctions, plenum chambers, and stilling facilities.

4. DAM SAFETY ASSURANCE FOR EMERGENCY SPILLWAYS:

a. General. Mr. Ray Bodine introduced the topic of potential erosion of materials in the discharge channels of high-level emergency spillways for SWD lake projects. The potential consequences of such erosion were graphically illustrated in the experienced overtopping of the Grapevine Lake spillway in the fall of 1981. This experience led to the investigation of the

scour potential downstream from all SWD projects with high-level spillways. Information on three of the ongoing spillway investigations were presented.

b. Wister Lake Spillway. Mr. Tom Horner explained that this spillway had been overtopped in 1957, 1960, and most recently in November 1984. A sloping, concrete apron extends about 103 feet downstream from the spillway crest. Near-vertical training walls converge from a 600-foot width at the crest to a 300-foot width about 626 feet downstream and then continue at this width an additional 367 feet downstream. With each overtopping, the major scour damage has occurred at the toe of the training walls along the converging portion downstream from the spillway apron. The scoured holes had been filled with a grouted riprap, but this protection was lost during the latest overtopping. Proposals for a more substantial scour protection are being developed.

c. Addicks and Barker Spillways. As explained by Mr. Charles Scheffler, the total width of the uncontrolled spillway sections at the ends of these two Houston area projects is about 6 miles. The heights of these sections vary from about 3 to 13 feet above the natural ground elevation. Under current spillway design criteria, the maximum spillway discharges would erode through these existing turfed sections. GD is currently investigating economical methods of protecting these sections from erosion. Among the measures being considered are roller compacted concrete, soil cement, and regular concrete paving.

d. Grapevine Spillway Model Studies. Mr. Ron Turner described the model studies of the Grapevine spillway being conducted at the Waterways Experiment Station (WES) under the Chief's office Repair, Evaluation, Maintenance and Rehabilitation Research (REMR) Program. The purpose of this general research effort is to evaluate the effectiveness of various methods for protecting high-level spillways from extensive erosion damage. Although the Grapevine spillway remedial measures have already been completed, WES is using this project in the model because of all the field data available at Grapevine Dam to check model-prototype conformity.

5. FLOOD CONTROL HYDRAULICS:

a. General. The extensive programs in all districts to provide flood protection for their local communities have resulted in a number of noteable engineering developments. Two such developments are described below for the possible benefit of the other offices.

b. Cross-Section Plotting Program. Mr. Elston Eckhardt described the cross-section plot program titled "TSTX" which was recently developed in FWD. The program plots HEC-2 input and

output data using either HDS or Tektronix 4100 series graphics terminals along with Cal-Comp or Hewlett-Packard pen plotters. The program plots cross-sections, bridges, levees, encroachments, channel improvements, water surfaces and bank stations. The program, using the "Template" graphics software, takes advantage of segment capabilities of the Tektronix terminals thereby significantly decreasing plotting time. Additional information can be obtained from Mr. Elston Eckhardt in FWD by calling FTS Number 8 + 334-8459.

c. Flood Control Diversion Tunnels. The Fort Worth District has recently developed a number of flood control projects which utilize underground diversion tunnels to divert flood waters past particularly constructed reaches of surface channels. Mr. Ronald Turner described these tunnels along with their inlet and outfall structures as proposed for the San Antonio River and San Pedro Creek in the downtown area of San Antonio, Texas. The large tunnels (over 20-foot diameter) are set about 150 feet deep to avoid interference with existing underground utilities and building foundations. In locations where foundation materials are suitable for tunneling and where efforts to increase flood channel capacities on the surface are severely hampered by relocation requirements, tunnels may well prove to be the most economical alternative. FWD is also considering diversion tunnel alternatives for flood protection projects located on streams in Austin, Texas.

6. WATER QUALITY - SEDIMENTATION ACTIVITIES. Mr. David Brown summarized the water quality and sedimentation activities within SWD during the past year. Items covered included the following:

a. Water Quality. During 1985, FWD submitted baseline water quality reports for two of the District's reservoirs. This brings the total number of SWD projects with water quality baseline data to 40. The goal is to complete such data baselines for all the SWD reservoir projects.

b. Sedimentation. During the past year, resurveys were run for 62 sediment ranges along the Arkansas River navigation channel plus all the sediment ranges within Pool 13. Resurveys were also completed on three reservoir projects. In addition, the original sedimentation and degradation range survey was completed for Skiatook Lake. Six sediment resurveys were scheduled during FY 1986, but funding has been approved for only four of them.

c. Funding. The major constraint to reaching the goals of the SWD water quality and sedimentation programs is funding restrictions. Anticipated future funding limitations and federal program cutbacks are expected to continue to control the annual performance levels of these two programs.

7. CONCLUSION. Several attendees expressed appreciation for the annual meeting and the opportunity it afforded them to become more familiar with the workings and problems faced by their hydraulic engineer counterparts in the other districts. All attendees were asked to keep in mind the possibility of hosting next year's annual meeting. Should a project with features particularly interesting to hydraulic engineers (such as the San Antonio flood control tunnel) be under construction or completed, a field trip to the site would be an appropriate part of the annual meeting.

2 Attachments

1985 ANNUAL HYDRAULICS MEETING
SOUTHWESTERN DIVISION - CORPS OF ENGINEERS
14 November 1985

ATTENDANCE LIST

NAME	OFFICE SYMBOL	TELEPHONE (FTS)
Justice Edge	SWAED-PH	474-1034
Ronald Turner	SWFED-HG	334-2222
George Carefoot	SWFED-HG	334-8458
Robert Gergens	SWFED-HG	334-2996
Elston Eckhardt	SWFED-HG	334-8459
Gist Wilbur	SWLED-HW	740-5441
Carroll Scoggins	SWTED-H	745-7207
Loren Pope	SWTED-HE	745-7207
Thomas Horner	SWTED-HE	745-7206
Terry Coomes	SWDED-W	729-2385
Tasso Schmidgall	SWDED-WA	729-2359
Ray Bodine (Ret'd 1 Jun 86)	SWDED-WA	729-2359
David Brown	SWDED-WA	729-2384

ATTACHMENT 1

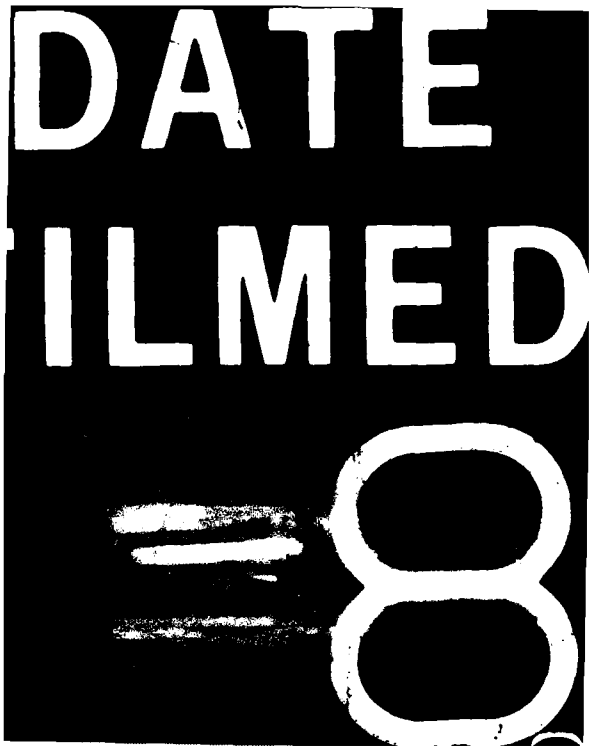
SWD ANNUAL HYDRAULICS MEETING
SWD OFFICE - PLANNING CONFERENCE ROOM 309B
DALLAS, TEXAS

14 NOVEMBER 1985

MEETING SCHEDULE

TIME	TOPIC	PRESENTER
1000 - 1015	WELCOME - INTRODUCTION	T. Coomes
1015 - 1115	GENERAL STATUS OF HYDRAULICS IN SWD:	
	(Moderator)	T. Schmidgall
	Anticipated Workload - Type of Work	
	Organizational Setup	
	Workforce Size	
	Workforce Capabilities	
	Recruit Availability	
1115 - 1215	LUNCH	
1230 - 1330	NON-FEDERAL HYDROPOWER ON CORPS DAMS:	
10	(Moderator)	D. Brown
20	LRD, Arkansas River Experience	G. Wilbur
15	FWD, Canyon Outlet Retrofit	R. Turner
15	AD, Abiquiu Outlet Retrofit	J. Edge
1330 - 1430	DAM SAFETY ASSURANCE - EMERGENCY SPILLWAYS:	
10	(Moderator)	R. Bodine
15	TD, Wister Dam	T. Horner
15	GD, Addicks and Barker Dams	C. Scheffler
15	FWD, Grapevine Model Studies	R. Turner
1430 - 1445	COFFEE BREAK	
1445 - 1530	FLOOD CONTROL HYDRAULICS:	
5	Introduction	T. Schmidgall
15	FWD, Cross-Section Program	E. Echart
10	FWD, Diversion Tunnels	R. Turner
1530 - 1545	WATER QUALITY-SEDIMENTATION ACTIVITIES:	
	(Moderator)	D. Brown
1545 - 1600	OPEN DISCUSSIONS - CONCLUSIONS	
	(Moderator)	T. Schmidgall

ATTACHMENT 2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